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MONITORING TIMES

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WINGS

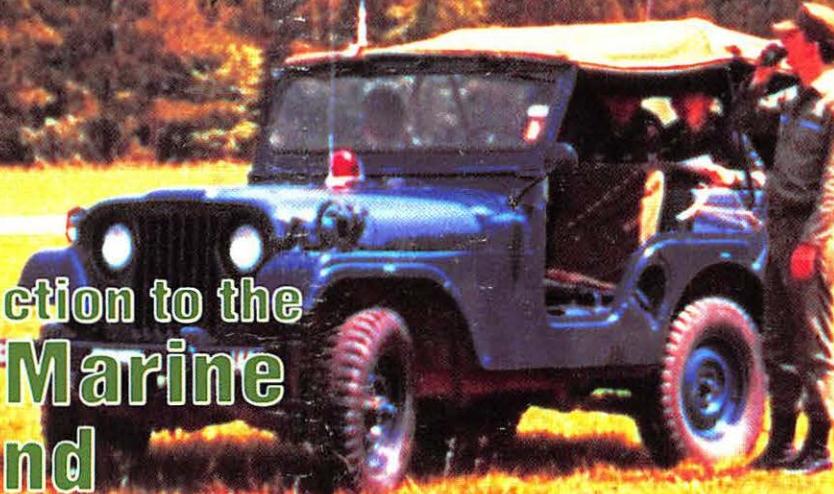
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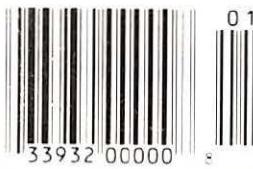
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January 1991

MONITORING TIMES

New Year's Resolutions by Ed Hesse

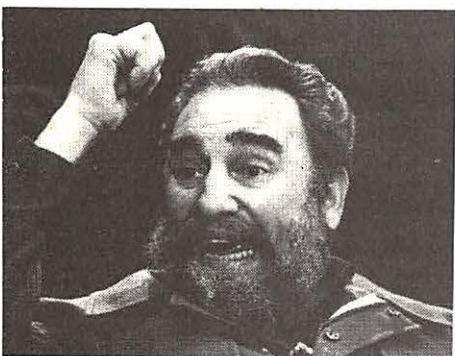
6

You know how you keep promising yourself this is the year you're going to find the time/equipment/know-how to enjoy your hobby for a change? Well, you won't do it if you expect an instant change in daily schedule and habits. But focus on one aspect each month and you might have a chance. It's really the only way, (short of getting a round tuit).

Wings by Everett Slosman

10

The number of emergency humanitarian and defense-related needs that are being met by the Civil Air Patrol every day of the year makes one wonder what we'd do without them. Ev Slosman takes a look at this civilian branch of the Air Force created by volunteers during World War II. Thanks to them we reap the benefit of some of the most interesting aero monitoring around.



Monitoring Cuba by J. J. Jessup

14

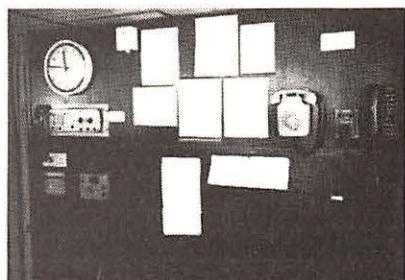
One of the final dramas in the disintegration of the Communist system is being played out off our own shores. The broadcasting battle between Cuba and U.S. stations, licensed or otherwise, is heating up as Cuba becomes increasingly isolated. There seems little doubt we are listening in to the end of an era.

Changing Partners by Everett Slosman

18

Ship to shore frequencies are among the most lengthy and confusing listings around. Is that why so few noted or responded to the Public Notices in the *Federal Register* regarding some substantial changes in the ship/shore pairs?

Whatever the reason, July 1991 will be a big headache for those who make their living on the waterways. But for the casual monitor, you can either read the ship/shore lists to cure your insomnia, or you can tune in to some fascinating frequencies that may keep you up all night!



COVER: Air and land mobile units on a coordinated search-and-rescue exercise.
Photo courtesy of the Civil Air Patrol.

And More...

Getting the Mail

How do those at sea get their news from home? By radiotelephone, of course. In addition to Everett Slosman's feature, Larry Van Horn also shares his enthusiasm and savvy on the wide variety of things that can be heard while monitoring maritime channels (p. 28).

On the other hand, there are other ways to be isolated besides being in a ship or plane -- The border community of CFOB, Fort Francis, Ontario, finds that radio station CFOB is their only source of news when the mail and the phone fail ... personal messages are read on the air in hopes the right persons are listening (p. 52). This involves a bit more censorship than the Philippine station DZRH exercises. It broadcasts personal phone calls to Saudi Arabia (p. 4)!

There are times when you have to rely on the mail service, however, and one of those times is when you're sending a QSL report. International mail isn't quite the same as the U.S. Postal Service, says Uncle Skip. He shows you the steps to ensure your report gets into the right hands (p. 40).

A Test of Skill

How skillful is your scanning? Bob Kay is initiating the very first official scanning test to test your expertise. See if you can acquire your certificate (p. 32)!

Mail in your Survey Card!

We've got equipment reviews, new product releases, projects to build, and a new, complete guide to shortwave listening (p. 58). Tune in to *Monitoring Times* and tune in to your world! Don't forget to give us your feedback; mail in your survey card -- today!

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LETTERS

Gerald Park of East Lansing, Michigan, offers a tip for readers with an interest in marine monitoring. "The Great Lakes can be hazardous during severe storms," says Gerald. "Remember the Edmund Fitzgerald."

"The shipping companies appear to be more cautious now and that caution gives the shortwave listener some interesting monitoring on stormy nights." The action, says Gerald, takes place on 4369.8 kHz, channel 405 from the Voice of the Great Lakes, WLC Rogers City.

"After the 2240 hours (EST) MAFOR (coded weather) broadcast, the ships of the Great Lakes fleet check in with position, barometric pressure, and wind velocity reports as well as their short-term plans." The check-in only occurs when the weather is really bad.

Gerald operates a cabin cruiser on the Lakes during the summer and says that "waves of 3 to 4 feet are bad enough." During winter storms seas of 10 to 16 feet have been reported on Lake Huron.

Our Lake-faring reader says he leaves his big Racal radio at home when he goes out on the boat and listens on the Lowe HF125 and his TS430 ham rig. "When you listen at anchor (with no motors running), the background noise is as quiet as it ever gets."

Sounds real nice, Gerald. If you have any open berths this summer, give us a ring!

Monitoring Times' own Sue Kennedy, a big fan of cricket, wants shortwave broadcast listeners to know about Radio Australia's "Summer of Cricket" broadcasts. This easy-to-hear station is offering play-by-play commentary of a series of games or "tests" between the boys from Down Under and England.

Cricket is a fascinating sport, akin to our baseball. And right now, while we're suffering the perils of winter, the southern hemisphere is smack dab in the middle of summer.

For those who would like to sample some of the excitement, here's the schedule.

On January 4, 5, 6, 7 and 8, it's Australia v England. Matches start at 2300 UTC. Broadcast coverage starts at 0100 and continues to 0700 UTC on 11880, 15240, 15530, 21525 and 21775 kHz.

On January 25, 26, 27, 28 and 29, it's Australia v England once again. Tests start at 2330 UTC. Broadcast coverage runs from 0100 to 0730 UTC. The frequencies are the same for the January 4-9 matches.

Finally, on February 1, 2, and 3 and again on the 5th and 6th, there's the final test between Australia and England. This time the matches start at 0230. Broadcast coverage opens at the same time, continuing until 0630 on 15530, until 0800 on 11880, until 0900 on 21525 and until 1030 on 15240 and 21775 kHz.

Another shortwave note: If you've ever wanted to take one of the many "learn to speak a foreign language" courses offered by the big international broadcasters, but have been frustrated because they always seem to be on lesson 64 when you want to start, here's news.

Radio Beijing is starting their "Learn to Speak Chinese" course this month. There are a number of convenient transmissions, some loud and clear via Radio Canada International, so you'll be assured of a reliable signal.

There is a textbook that accompanies the class. In a recent issue of Radio Beijing's monthly listener's newsletter, *Messenger*, there is no mention of a price so perhaps, like their colleagues at Radio Netherlands and Deutsche Welle, the book is free. Write and ask. Their address is simple: Radio Beijing, Beijing, People's Republic of China. When you get the book, remember to say tanks.

Monitoring Times reader William Pepin recently accompanied a WWLP-TV 22 news crew from Springfield, Massachusetts, to Saudi Arabia. "The Defense Department has requested that exact locations not be given, therefore I am hesitant to divulge the transmit site," says Bill. "I

can, however, tell you that the satellite equipment is situated at the international press headquarters in a hotel on the Persian Gulf in eastern Saudi Arabia.



"In photo 1, the dish in the foreground is leased from Intelsat by NBC (Intelsat 338.5 transponder 73/13). The signals are received at the NBC satellite facility on Staten Island and carried by fiber optic cables to their studios at Rockefeller Center in Manhattan. The dish in the background is operated by CNN.



"I believe that the dish in photo 2 belongs to ABC. As you can see, there is little or no concern about leaving the equipment out in the open. Rain is not a problem."

Bill, thanks for the first-hand view of operations in the Persian Gulf.

A reader who is currently piloting an E-3 AWACS pilot provided another view with this shot of refueling above the sands of Saudi Arabia. He added the information that the E-3 "Airborne Warning and Control System" (AWACS) aircraft was equipped with 300-mile range radar, twenty UHF radios (These would be tuned to the 225-400 MHz

[More "Letters" on page 100]

COMMUNICATIONS

Pirate Celebrates 4th in Defiance

Springfield, Illinois' "Zoom Black Magic FM" has recently celebrated its fourth anniversary. Normally such events do not warrant attention in a radio magazine. After all, thousands of stations are still going after four years.

The difference is that Mbanna Kantako's FM station is unlicensed -- and was ordered off the air almost a year ago by a federal court judge. Kantako, along with Sangamon State University professor Mike Townsend has defied the federal government and they have used the case to spearhead a "micro radio" movement that seeks to make the airwaves "accessible to people with low and moderate incomes."

According to Townsend, "it takes a minimum of \$50,000 to start the smallest licensed FM station (100 watts). This fact means that 70 million low- and moderate-income people are excluded from [owning their own radio station]."

Other stations are reportedly joining the micro radio revolution. Townsend reports that a second "Zoom" station went on the air in defiance of federal law late last summer and "there is a good possibility of additional zoom stations coming on-the-air in Chicago, Richmond, and Birmingham by spring."

Those interested in starting their own micro radio station can contact Professor Townsend at 217-786-6687.

Goodbye RCI?

Every year, it seems as if Radio Canada International is threatened with yet another lethal budget cut. And every year, we here at *Monitoring Times* run a breathless "please hurry and write to the Prime Minister" article, hoping to pull the popular shortwave station back from the brink.

This year, the RCI budget thriller occurred between issues of *Monitoring Times* and thus you were spared the



usual call to arms.

This time the Canadian government, looking for a way to pay for their contingent in the Persian Gulf, decided to cut the budget of RCI's parent organization, the CBC. The CBC, then, decided to save their rumps by simply eliminating the international service (RCI). In the end, someone introduced a bill in Parliament making it mandatory for the CBC to maintain an international service. So, as one staffer puts it, "we're still in critical care. But we do see someone arriving with oxygen."

Radio Canada International is an institution of which all Canadians should be proud. It is among the most professional -- if not the most professional -- and highly rated stations in the world. There is no reason whatsoever that it should be forced to be annually taken to the gallows only to have the rope removed from its neck at the last minute.

You can make a difference in the future of Radio Canada International by sending a letter of support to:

The Rt. Hon. Brian Mulroney
Prime Minister of Canada
House of Commons
Ottawa, Canada

You might also wish to send a copy

of that letter to Rt. Hon. Joe Clark, Minister for External Affairs, House of Commons, Ottawa, Canada.

We urge you to write.

Radio Shack Expands

Tandy Corporation, the nation's largest consumer electronics retailer, has launched a new experimental mall store concept called "The Edge in Electronics."

The Edge in Electronics is designed for mall shoppers attracted to fashionable, state-of-the-art personal and portable name-brand electronics products. The 1,000 square foot stores will focus on a broad selection of full-featured personal and portable electronics like audio, video, telecommunications, calculators, data management, travel, gift and other accessory products.

The company has opened nine stores in Dallas/Fort Worth, Houston, Laredo, San Antonio and Austin in Texas and in the greater Washington D.C. area.

Radio Soap Opera

Lita Belga had not heard from her husband for months. When she learned he had died in a car accident in Saudi Arabia, she wept. Millions of other Filipinos, listening in on the conversation, wept, too.

Belga got the bad news during a telephone call to her husband's Saudi employers -- paid for and broadcast by a private radio station, DZRH.

The program, called, "Around The World, With Love," features telephone conversations between Filipinos and their relatives working abroad. The calls are free -- on condition that they can be used on the show.

There is no shortage of people wanting to use the program to contact relatives overseas.

"You have not been sending money," Gloria Abalos said in a recent call to her husband, Ernesto, in Saudi Arabia. "I will kill myself, that's what

COMMUNICATIONS

I'll do... I don't care how long you stay there so long as you send us money."

Most callers are too poor to afford overseas telephone calls. Every morning they come to DZRH's studios to sign up. All but emergency cases wind up on the waiting list, which now runs about two months.

"I'm here at DZRH," says one caller on the air. "Remember how we used to listen to other people's problems on the air? Now they are listening to ours."

Don't Touch That Dial

Everybody in Atherton, California -- all 8,000 of them -- were given free FM radios last month. Believing in the idea that "you never can be too prepared," the town council issued each household a mini-radio pre-tuned to the local high school radio station on 89.1. The cost to the town was about \$25,000, all in preparation for the widely heralded "big one" earthquake.

"Our main problem during last year's quake was dissemination of information to the public," said Atherton Police Chief Kip Rolle.

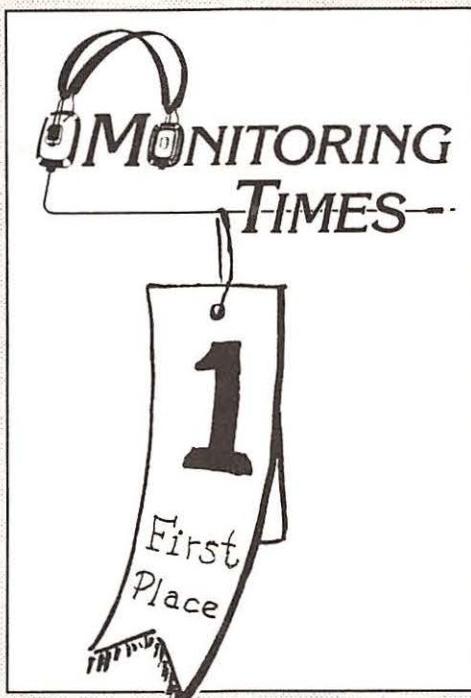
But why a pre-tuned radio? According to Councilwoman Nan Chapman, "People couldn't remember the call letters of KCEA so they could find out what was going on."

In addition to the sharp-looking pre-tuned, pre-packaged radios, Atherton has also invested in an array of cranes, buzz saws, and even a helicopter.

California Cordless

Did you know: California Assemblywoman Gwen Moore (D-Los Angeles) successfully introduced a bill making it a crime to intercept calls made over cordless phones, "as it already is for regular and cellular telephones."

The bill was reportedly signed into law by the governor.



MT Rates #1!

In a recent survey of Radio Canada International listeners, *Monitoring Times* was rated the #1 monthly radio publication in North America -- over 11 percentage points higher than its closest competition and 41.73 percentage points better than anyone else.

We have you to thank you such good marks -- an active, involved readership that's not afraid to take pencil in hand and tell us what they like and don't like about the magazine.

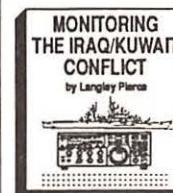
Help keep *Monitoring Times* #1. Be sure to take a minute and fill out your survey card. It can be found in this issue.

Many thanks. We look forward to continuing to serve you in the months and years ahead!

Thanks and credits to: The Associated Press; Kenneth Curwin, Lexington, Ohio; Bill Henry, Virginia Beach, Virginia; James Hughes, Mt. Pleasant, Michigan; Ian McFarland, Montreal, Quebec; Michael McDowell, Fair Haven, Michigan; The San Jose (California) *Mercury News*; the folks at Sherwood Communications Associates, Ltd., Southampton, Pennsylvania; Henry Spearman, Los Angeles, California; Robert E. Thomas II, Bridgeport, Connecticut; Ralph Vogel, Norwalk, Ohio; Thomas Zeisler, Duluth, Minnesota.

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MONITORING THE IRAQ/KUWAIT CONFLICT

by Langley Pierce

If you want to hear the inflight conversations between the fighters in the Gulf, or the ship to shore calls, or the US Navy then Monitoring the Iraq/Kuwait Conflict is a must.

This guide will show you where to find the action, saving you hours of scanning the bands, and clearly explains what you will hear and the background. Not only are there large frequency lists, which have been monitored by the author, but sections on the joint US and Gulf Air Forces, VIP and Presidential flights, commercial aviation, Gulf shipping and broadcasting stations.

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Some New Year's Resolutions for 1991

by Ed Hesse

1991 is officially here -- time to make some New Year's resolutions. And what better resolutions to make than those which can make your monitoring activities more enjoyable in the coming year?

Here are 12 resolutions -- one for each month -- to help you get the most fun out of your hobby of monitoring:



Clean out your scanner's memories
and get a fresh start on the year.

Just about every scanner listener has a habit of buying a scanner, filling its memories with frequencies, and then leaving it exactly as it was the day it was purchased. Gradually, the channels get stale. Your interests change, but somehow the scanner contains the same old frequencies.

If you don't believe that there's a lot of dead wood in your scanner, try this experiment: turn it on and let it run through all its channels. How many times does it stop? How long does it stop? Does it stop on frequencies that you're still very much interested in? Start the new year right, and start from scratch. Out with the old, in with the new.

Get out your scanner directories or past copies of *Monitoring Times* and come up with new frequencies -- ones that look like they'll be fun to monitor. Put them into your scanner and see how they fit into your

present monitoring style. If dissatisfied with some, put in more new ones. Keep at it until you're completely happy with all the frequencies.

February 1991						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Get into the real fun of
scanner listening: use the
"search" feature and look for
new frequencies.

Following up what you've done in January, use the "search" feature of your scanner. Choose a section of the spectrum

you're interested in and search through it. In this way, you'll find new frequencies, possibly ones that haven't been listed in any directory. For example, choose 461.0 to 470.0 and see what itinerants are active in your locale. You'll find a renewed interest in monitoring, and you may find that these new frequencies spark additional searching through the spectrum.

There's a sense of pride that goes with this activity, and it's a great way of adding new frequencies to your scanner. When you find them, why not share with the readers of *MT*?

March 1991						
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31						

Expand your monitoring day.

The days are starting to get longer, and so should your monitoring day. If you're like many monitors, you probably turn the scanner on in the morning and listen to it until you leave for work. You then enter a "quiet zone" for monitoring until you return from work. Why not expand your monitoring by taking the unit with you? With many rigs, all you need is a cigarette lighter plug to provide power for the rig and a magnetic mount antenna. Be sure to observe any local restrictions on mobile monitoring, of course.

If your job permits listening at your desk or work-space, just plug in the scanner again. If you move about in your work, away from your auto, consider a hand-held scanner. Invest in some nicad batteries and a belt clip, and you're in business again. Most of us have many opportunities to monitor during our average day, and it's a wonderful way to shorten the day and make it more interesting.

April 1991						
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28	29	30				

Improve your listening abilities with an outside antenna.

The warmer weather is approaching, and it's time to consider an outside antenna if you don't have one already. If you do, think about upgrading it, or at least checking the coax and the connections to see how they fared during the winter. There's only so much you can expect from an 18 inch whip. If you're able to get an outdoor antenna and get it up about 20 or 30 feet in the clear, it will seem like you've got a new scanner.

The difference between a signal hardly breaking the squelch and one that's Q5 on your scanner is dramatic. You can listen for hours to good signals brought in by an outdoor antenna. You can expand your listening horizons in many ways by having an antenna that will feed such signals to your unit. Why not take advantage of the warming weather to consider such an improvement to your station?

May 1991						
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Consider becoming an "expert" in one area of scanning.

Yes, there are many, many areas of scanning for us to dabble in, but why not pick one of great interest to you and see how expert you can become with it? For example, if you live near a large city and are interested in police monitoring, think about finding out all you can about its police department. Not just its frequencies, even though these are important, but its manpower, units, "lingo," and so forth. If something big starts to take place, be able to track down the appropriate units and follow the action as it takes place.

If you live in an area where there's a lot of air traffic, consider becoming an expert in the arrival, departure, and hand-off frequencies. Get to know the airlines involved and their time schedules. In short, know what's taking place on the air in the air.

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June 1991						
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30						

Summer is here. Get equipped for summer storms and power outages. Become energy independent.

With its beautiful weather, summer also brings sudden storms of high intensity and resulting power outages. We tend to take for granted the availability of electric power, that it will be there whenever we need it. All it takes is one heavy thunderstorm to prove us wrong.

Since this is so, look into battery back-up for your scanners and flashlights and AM/FM radios. Let's say that the storm has hit, the power's gone. How do you listen to your scanner or the local AM station that can help you find out what's going on around your home? Even if you have a battery-powered scanner and AM radio, what's the condition of their batteries?

My love affair with nicads continues, but I've learned not to depend on nicads when the chips are down. Sitting on a shelf in my shack is a good supply of AA, D and 9-volt batteries which are solely for use when the lights go out. Sure, I'll use my nicads every day and charge them every few days, but my alkalines are for emergencies. To go one step farther, I regularly check the power level of these back-up batteries with a very inexpensive Radio Shack battery checker.

Why not hop in the car right now and buy enough back-up batteries for all your rigs? The worst that can happen is that you'll never need them. Lucky you.

July 1991						
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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Get a "convert" to scanner listening. Expand the hobby.

The summer generally means cook-outs, barbecues, picnics, long days at the park or beaches -- all wonderful ways to meet people. Bring your scanner along with you, and I guarantee that you'll run into at least one (at a minimum) person who is fascinated with the whole concept of scanning. What is that radio? What can you hear on it? Is that really the local police department we're hearing? You're allowed to listen to that?

That's what they call leading questions. And they lead to a great discussion of scanning. The next question generally is "How much does something like that cost?" or "Do you need a license to listen?"

By answering someone's questions and letting him or her know how they can follow up this interest, you're on your way to adding another monitor to our ranks. Just think: if it wasn't for you, they wouldn't know about our wonderful hobby. Put another way, just think: because of you, someone else can now enjoy listening to scanners.

August 1991						
S	M	T	W	T	F	S
1	2	3				
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Be prepared to monitor emergencies.

For June, we suggested that you have battery back-up for your radios. As we get into late summer, at least here on the east

coast, the hurricane season has started. This means that a violent storm with high winds and huge amounts of rain and ocean water might come to my town and cause terrible damage. In addition, electric power may be out for days.

What does all this mean? It means that we should know what frequencies to monitor before, during and after such an emergency. Yes, I know that radio and television will do a lot before the storm strikes, but after that, the coverage will pretty much focus on the big city or on "sound bites," completely overlooking the suburbs where the real damage has taken place, thanks to the proximity to the ocean and the large number of trees. As already noted, unless your batteries are good, you won't even be able to monitor such sparse coverage.

What you need in this emergency is to have at least one of your scanner banks tuned in to the appropriate local frequencies — county, township, village, police, fire, utilities — that will be used to direct the operations that contribute to the clean-up. Even if hurricanes are a distant threat to your community, think of other natural disasters — snowstorms, tornadoes — that can cause major problems in your area. Why not spend a few minutes getting the emergency frequencies and putting them into a distinct section of your scanner so that if and when "it" takes place, you'll be better able to follow the action.

September 1991						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Think about giving something back to the hobby.

The reason that monitoring has grown so well and so quickly is that scanner monitors tend to be a caring and sharing group. When someone locates interesting frequencies, he invariably shares the information with others, usually through the medium of magazines like *Monitoring Times*. As good as magazine columnists are, their columns are a lot better when readers send in frequency information. When a technically-oriented person discovers how to modify a scanner or improve an antenna, and shares that information with others, all monitors benefit.

Think about the things you've learned about scanners. If it's something you've learned on your own, consider sharing that item with everybody. The easiest way to do

this is simply to send the idea to the appropriate editor of this magazine, and let him/her put the finishing touches on it. If you have writing skills, consider writing an article on an area of your experience or expertise. Remember: it's the readers and their contributions that make any magazine worthwhile.

October 1991						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Look into other areas of monitoring. Consider shortwave.

The days are starting to get shorter, and the sun sets earlier each day. This means that shortwave listening has a longer day, really starting to boom at sundown. Shortwave listening is a totally different type of monitoring, and it adds a whole new sense of excitement to listening.

You can hear the cultured diction of the news reader of BBC who is reporting the latest developments in world news. You can discover the identifications of beacons operating under 500 kHz. You can hunt for state-side AM stations that appear after dark. You can listen to amateur radio nets passing traffic. It's all out there for the SWL to find and to enjoy.

If your budget permits, you can buy a good low-band rig for as low as \$200. It will probably be so sensitive that you won't need an outdoor antenna. Family members can enjoy AM and FM broadcasts on it. The radio should last for a lifetime, and it may lead you deeper into other aspects of SWLing.

November 1991						
S	M	T	W	T	F	S
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Consider being someone that others monitor.

This doesn't mean buying a radio station. It simply means that there are ways -- legal, too -- that you can transmit and, in essence, own your own radio station. A simple way to transmit is, of course, by buying a CB rig. Many people have found that CB is a

stepping stone into other areas of radio such as amateur radio. If you have several friends in the area who are into monitoring, consider buying CB radios and having one channel for contacting and alerting each other to action taking place on various frequencies.

By doing this, you'll probably attract other CB users who may also be interested in monitoring -- or getting interested in it. CB has a mixed reputation, but you can find a lot of nice people on it. You can help them to cultivate more sophisticated interests and possibly form a club or social group centered around monitoring.

Think about becoming a ham, too. It's getting easier to become one, and once you do, your spectrum for transmitting will increase to a worldwide basis. Novices and technicians are able to transmit on 10 meters which, when "open," will let you talk around the world.

December 1991						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Ah, your last resolution -- This year be good to yourself.

It's December which, among other things, means Christmas and Chanukah. A time of giving presents. Why not be good to yourself this year? Why not think about upgrading your scanner? If you've been plugging along with a 10-channel, crystalized scanner with no search feature, and an eight-inch telescoping antenna, let Santa Claus know that you'd like something better.

Multi-featured scanners are still pretty good bargains, and \$200 or \$300 can buy one that would add many new dimensions to your scanning activities. Think of all the nice things you do for other people; why not do something nice for yourself?

Perhaps by the end of 1991, you'll have carried out some, or many, or all of these resolutions. But even if you've done only one or two, you should find that you're enjoying your monitoring so much more.

Best wishes for 1991.

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Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 - Dept. UN14, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires January 31, 1991.

Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add \$12.00 for shipping in the continental U.S.A.

RELM RH608B-A	\$419.95
RELM RH256B-A	\$294.95
Bearcat 800XLT-A	\$229.95
Bearcat 200XLT-A	\$229.95
Bearcat 100XLT-A	\$179.95
Bearcat 70XLT-A	\$139.95
Bearcat 55XLT-A	\$99.95
Bearcat 210XLT-A	\$164.95
Uniden CARD-A1	\$144.95
Uniden RD3XL-A1	\$144.95
Uniden RD9XL-A	\$119.95

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AM468V-A Uniden answering machine	\$49.95
AM480-A Uniden answering machine	\$49.95
AM480-A Uniden answering machine	\$69.95
FP300-A Uniden feature phone	\$34.95
FP302-A Uniden feature phone	\$49.95
FP320S-A Uniden feature speakerphone	\$49.95
FP322S-A Uniden feature speakerphone	\$59.95
XE570-A Uniden cordless phone	\$74.95
XE422S-A Uniden cordless speakerphone	\$109.95
XE777S-A Uniden cordless speakerphone	\$109.95
BT100-A Uniden Trimstyle phone	\$17.95
KT280-A Uniden Family phone with 911 feature	\$29.95
FF150-A Uniden Executive phone	\$39.95

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List price \$587.50/CE price \$299.95/SPECIAL 16 Channel • 25 Watt Transceiver • Priority The RELM RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the RH606B-A is available for \$429.95. A UHF 15 watt, 16 channel version of this radio called the RU156B-A is also available and covers 450-482 MHz. but the cost is \$454.95.

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The Uniden line of Citizens Band Radio transceivers is styled to compliment other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 810E to the 310E handheld, there is no better Citizens Band radio on the market today.

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GRANT-A Uniden 40 channel SSB CB mobile	\$166.95
PC122-A Uniden 40 channel SSB CB mobile	\$119.95
PRO510XL-A Uniden 40 channel CB Mobile	\$38.95
PRO510AXL-A Uniden CB Mobile with antenna	\$49.95
PRO520XL-A Uniden 40 channel CB Mobile	\$56.95
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PRO810E-A Uniden 40 channel SSB CB Base	\$174.95

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Bearcat® 800XLT-A

List price \$549.95/CE price \$239.95/SPECIAL 12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC Bands: 29-54, 118-174, 406-512, 806-912 MHz. Now...nothing excluded In the 808-912 MHz. band. The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/4" x 4 1/4" x 1 1/2". With nothing excluded in the 808-912 MHz. band, this scanner is an excellent choice for law enforcement agencies. If you do not need the 800 MHz. band, a similar model called the BC 210XLT-A is available for \$178.95.

NEW! Bearcat® 147XL-A

List price \$189.95/CE price \$94.95/SPECIAL 10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC Bands: 29-54, 136-174, 406-512 MHz. The Bearcat 147XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the BC560XLT-A featuring priority, weather search, channel lockout and more is available for \$94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

NEW! Ranger® RCI2950-A

List price \$549.95/CE price \$249.95/SPECIAL 10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Auto Squelch RIT • 10 Programmable Memory Positions Frequency Coverage: 28.0000 MHz to 29.6999 MHz. The Ranger RCI2950 Mobile 10 Meter Transceiver by Ranger, has everything you need for amateur radio communications. The RF Power control feature in the RCI2950 allows you to adjust the RF output power continuously from 1 watt through a full 25 watts output on USB, LSB and CW modes. The RCI2950 also features a noise blanker, roger beep, PA mode and more. The Mic Gain Control adjusts the gain in transmit and PA modes to maximize talk power. Digital VFO. Built-in S/RF/MOD/SWR meter. Frequency selections may be made from a switch on the microphone or the front panel. There is even a repeater split switch for repeater offsets. The RCI2950 lets you operate AM, FM, USB, LSB or CW for full mode operation. The digitally synthesized frequency control gives you maximum stability. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With memory channel scanning, you can scan ten pre set frequencies to keep track of all the action. An optional CTCSS tone board is available (order # RTONE) for \$59.95. For technical questions, call Ranger at 714-858-4419. Order your Ranger RCI2950 from CEI today.



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mobile scanner
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PS001-A Cigarette lighter cable for BC55XLT	\$14.95
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BC70XLT-A Bearcat 20 channel scanner	\$159.95
BC172XL-A Bearcat 20 channel scanner	\$134.95
BC1-A1 Bearcat Information scanner with CB	\$119.95
BC310A-A Bearcat Information Radio	\$79.95
BC330A-A Bearcat Information Radio	\$104.95
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FBW-A Frequency Directory for Western U.S.A.	\$14.95
RFD1-A MI, IL, IN, KY, OH, WI Frequency Directory	\$14.95
RFD2-A CT, ME, MA, NH, RI, VT Frequency Directory	\$14.95
RFD3-A DE, DC, MD, NJ, NY, PA, VA, WV Dir.	\$14.95
RFD4-A AL, AR, FL, GA, LA, MS, NC, PR, SC, TN, VI	\$14.95
RFD5-A AK, ID, IA, MN, MT, NE, ND, OR, SD, WA, WY	\$14.95
RFD6-A CA, NV, UT, AZ, HI, GU Freq. Directory	\$14.95
RFD7-A CO, KS, MO, NM, OK, TX Freq. Directory	\$14.95
SMH-A Scanner Modification Handbook	\$14.95
ASD-A Airplane Scanner Directory	\$14.95
SRF-A Survival Radio Frequency Directory	\$14.95
TSG-A "Top Secret" Registry of U.S. Govt. Freq.	\$14.95
TTC-A Tune in on telephone calls	\$14.95
CBH-A Big CB Handbook/AM/FM/Freeband	\$14.95
TIC-A Techniques for Intercepting Communications	\$14.95
RRF-A Railroad frequency directory	\$14.95
EEC-A Embassy & Espionage Communications	\$14.95
CIE-A Covert Intelligence, Elec. Eavesdropping	\$14.95
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A80-A Magnet mount mobile scanner antenna	\$34.95
A70-A Base station scanner antenna	\$34.95
USAMM-A Mag mount VHF ant. w/ 12' cable	\$39.95
USA-K-A 1/4" hole mount VHF ant. w/ 17' cable	\$34.95
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WINGS

by Everett Slosman

Search and rescue, tissue transportation, surveillance, defense sorties -- You can hear it all as you listen to this civilian arm of the Air Force broadcasting in the clear.



The mission of the Civil Air Patrol (CAP), says the *Introduction To the Civil Air Patrol* handbook, is "to voluntarily use its resources to meet civil emergencies, to encourage aerospace education of the general public, and to motivate young men and women to ideals of leadership and service through aerospace education and training."

In real life, CAP is the Air Force auxiliary. You see these teenagers and supervising adults at air shows, airbase open houses, parades, fly-ins, and demonstrations, anywhere their Air Force-style uniforms will attract attention and make public relations points for both the CAP and the military.

Maybe you are old enough to remember reading about the CAP in the Sunday funnies, where Zack Mosley turned his "Smiling Jack" cartoon strip into a public relations vehicle for the organization. The strip's namesake, pilot Smiling Jack, along with other characters such as Downwind Jackson and Fatstuff, took part in an unending series of World War II adventures.

CAP had its roots in pre-war 1941 when a handful of civilian aviation enthusiasts, business executives, and politicians who

understood the military value that privately licensed pilots represented, set out to convince civilian and military authorities that a "flying minuteman" unit was essential. The National Civil Air Patrol became a reality one week before Pearl Harbor.

The patrol's story has been told many times; over-aged civilian pilots and teenaged kids flying thousands of missions for the military, from courier duty to anti-submarine patrols. Fifty of these noncombatants died in the line of duty.

In the beginning, the military was less than pleased with a civilian intrusion into their sacred domains. Yet, at the same time, CAP stood for the only nation in the world allowing civilians to fly noncombatant missions. Payback time came after the war when the Army Air Corp became the Air Force and adopted the Civil Air Patrol as its own.

Military responsibility flows downward from Headquarters Air University to Headquarters CAP-USAF and National Headquarters, CAP, Maxwell AFB, Montgomery, Alabama. From there, it carries into the field structure, eight regional and 52 wing liaison offices covering the United States and staffed by Air Force personnel.

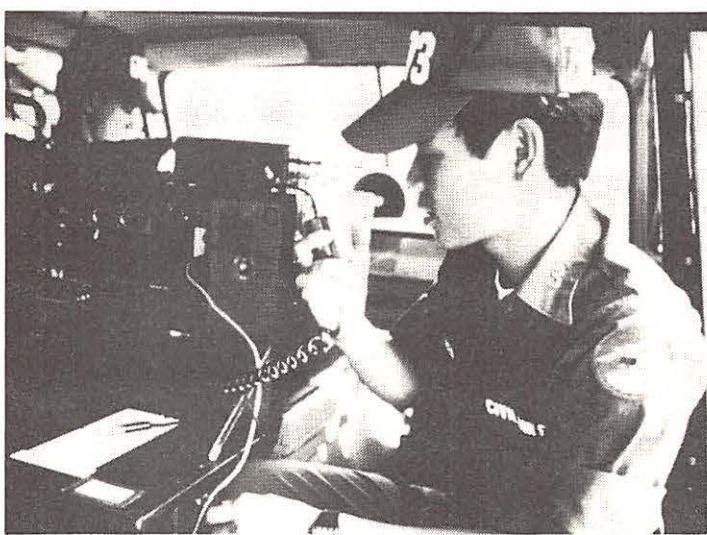
The civilian side starts with the National Board and National Executive Committee, including Headquarters CAP-USAF, and National Headquarters-CAP, eight region commands, 52 wings, a number of optional groups, the senior, cadet and composite squadrons, and, at the bottom, the individual flights.

Regions and wings are usually under the command of a colonel. The basic operational unit is the squadron with five squadrons in a wing constituting an optional group. Under certain conditions, in sparsely populated areas, flights operate as part of either a squadron, group or wing.

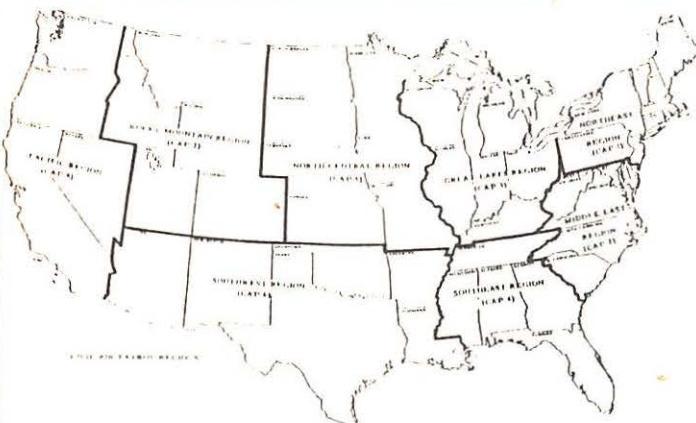
The most interesting activities involve emergency services: search and rescue (SAR), and disaster relief (DR) functions which provide the broadcast action.

SAR missions in the continental U.S. originate with, and are coordinated by, the Air Force Rescue Coordination Center (AFRCC) at Scott AFB, Illinois. The Coast Guard controls SAR activities in Puerto Rico, while the Joint Rescue Coordinating Center (JRCC) handles Alaska and Hawaii. The CAP SAR personnel do not initiate or control these operations even though all CAP SAR participants have undergone rigorous training. They function as a support activity.

CAP is incorporated into a rescue mission only if it requires slow flying, low pass capabilities. This leaves members flying over difficult



Interior of a typical field communications vehicle set up for VHF



Civil Air Patrol Regions

Table I
CAP FREQUENCIES BY REGIONS
(*USB unless noted*)

Region	Frequency kHz				
ALL	2371	2374	4273**	4582	7635**
	7920*	11975*	14902*	20873*	26617*
	26620*	121600	143750*	143900	148150
	149.925*				

Region	Primary	Secondary
ONE	4466	4469
TWO	4585	4582
THREE	4604	4601
FOUR	4469	4466
FIVE	4506	4509
SIX	4627	4630
SEVEN	4601	4604
EIGHT	4585	4582
Alaska only	18205	
Emergency frequency	4582	

* CAP-USAF frequency

** Packet/RTTY

Sources: Public Affairs Office; Civil Air Patrol; Maxwell Air Force Base, AL; and *Shortwave Directory*, Bob Grove, 1990.

terrain under low light situations with minimal search conditions. Obviously, these flights entail some personal risks, but CAP mission coordinators have the overall responsibility for maintaining safe search procedures.

An officer takes care of paperwork, the mission personnel rosters, flight orders, reimbursement claims and reports necessary for proper unit administration.

The communications officer establishes and controls the search radio network, takes care of communications briefings, and establishes communications protocol. Air and ground operations officers perform the functions required by the mission coordinator.

CAP Disaster Relief activities exist to back up Military Support of Civil Defense (MSCD) and Military Support to Civil Authorities (MSCA) programs. Here, regions control their own assets while remaining under the control of a designated disaster relief agency.

SCORPIO

ID[Sta] Radio Moscow Location: Leningrad / USSR
Date: 10-23-90 Begin Prg: 01:30:17 End Prg:
Mode: AM Signal: Agv/Svc: Broadcast Freq: 7.305.00
Remarks: Contemporary Russian Music and News QSL: \$
Data: 2300-0728/99 01:00 > 02:15 / 7.305.00 AM / Signal (59+30) #230
[Radio] [←→] [CLS] Manual Mode [CLD] [Sr/F] [Qu/eX] [TJ]
====LogScan==== Log of John Doe

Terminal Unit Display Window

Terminal Unit Command Window

1 ID[Sta] 2 Locatr 3 Signal 4 Agency 5 Remark 6 TimeON 7 TimeOFF 8 Clear 9 Log 10 Optns

Integrated Multi-Function Communications Software for IBM PCs

Simultaneous

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■ Log Database Management

■ TU Digital Control/Disp

> LogScan, AutoLog and AutoTU functions > Interfaces with All Mode Terminal Units
> Mouse/Function Key control of Kenwood & Icom Revers & RS232 Digital Terminal Units
> Search Log by any field including Remarks > Scan Receiver based on Log Search criteria
> Copy RTTY & other DIGITAL signals > AutoTU sets TU mode as needed during scan
> LogScan has real time UTC and FRQ. limit options > AutoLog builds database from "hits"
> Run other programs (or DOS) from within *Scorpio* > Includes HF database & Manual

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Compuserve # 72557, 3560

Table II
CAP TRAINING NETWORK SCHEDULE

Region	Times (EST)		
ONE	0000-0230	1300-1700	2100-2400
TWO	0000-0200	1230-1600	2100-2400
THREE	0000-0230	1330-1600	2130-2400
FOUR	0000-0230	1230-1400	1430-1500
	2230-2400		
FIVE	0000-0400	1200-1600	1800-1830
SIX	0000-0400	1300-1430	2300-2400
SEVEN	0100-0400	1345-1530	1600-1800
EIGHT	0130-0630	1450-	2130-2400
National command network	1115 on 7635 USB		
	1130 on 14902 LSB		

Source: *Shortwave Directory*, Bob Grove, 1990.

Formal relationships exist between CAP and the American National Red Cross, Federal Emergency Management Agency and the Salvation Army for MSCD and MSDA. On the local level, the wings cooperate with state and local disaster groups and those social services organizations involved in emergency relief.

In the past, CAP units have provided courier and light cargo transportation, undertaken mercy flights, furnished debris removal labor and pitched in where needed.

Table III
CAP CALL LETTER ASSIGNMENTS

Region	Identifier Mobile Aircraft	Assignment	Tactical/ call sign		MOCKINGBIRD	Mississippi	KKI721
National Headquarters	HEADCAP Hubcap Flitech	Maxwell AFB	HEADCAP 22/ KJ9885/AZ64		PINEAPPLE	Puerto Rico	WWA353/93UI
ONE	NORTHEAST	Roslyn Heights NY	NORTHEAST 10/ KGC632/1FDG	FIVE	Sugar Hurricane BLUE CHIP	Tennessee	KIG448/OV19
	NUTMEG Rambler Rocket	Connecticut	KCC590/DJ46		Red Chip Gold Chip		
	PINETREE Pinecar Pineair	Maine	KCC591/L49P		NORTH CENTRAL	Kansas City	
	FREEDOM Pilgrim Clipper	Massachusetts	KCC592/N74U		Kansas	MO	NORTH CENTRAL 8/KAJ506/5QRF
	PROFILE Bobcat Saucer	New Hampshire	KCC593/SN5S		CORNSTATE	Iowa	KAF358/KF1L
	ZIG ZAG Domino Aircap	New Jersey	KEC994/S54P		JAYHAWK	Kansas	KAF359/KI5T
	EMPIRE Tomcat Wildcat	New York	KEC995/UE5K		STARFISH	Minnesota	KAF360/O24N
	KEYSTONE Rolling Stone Flight Stone	Pennsylvania	KCC465/YB9I	SIX	Dog Fish Cat Fish	Missouri	KAF361/PZ37
	RHODY Little Rhody Air Rhody	Rhode Island	KCC594/Y188		BLUE BIRD	Nebraska	KAF362/R087
	PICO Marble Mansfield	Vermont	KCC595/9DXH		Red Bird Black Bird		
TWO	MIDDLE EAST	Charlotte, NC	MIDDLE EAST 4/ KIL769/2VHP		WIGWAM	North Dakota	KAF363
	GABBY Vagabond Barfly	Delaware	KGC462/D793		Buffalo Meadowlark	South Dakota	KAF364/0JC2
	PLANT Tug Jet	Maryland	KGC464/N290		BLACKFOOT		
	AERO Aerodine Aeronaut	Dist Columbia	KGC463/QZ3W		DACOTAH		
	KITTY HAWK* CRESCENT** Side Car Box Car	North Carolina South Carolina	KIG446 KIG447/ZK6T	SEVEN	Mandan Cheyenne		
	BLUE FLIGHT Green Flite Red Flite	Virginia	KIG449/9F6J		SOUTHWEST	Dallas, TX	Southwest 11/ KKQ226/6W25
	MOUNTAINEER*** Overland Highland	West Virginia	KQD407/9N7T		THUNDERBIRD	Arizona	KOF424/BZ8S
THREE	GREAT LAKES	Indianapolis IN	GREAT LAKES 55/KSF248/35NP		Geronomo Tomahawk		
	RED FOX Yellow Fox Blue Fox	Illinois	KSC952/JT96		DOGWOOD	Arkansas	KKI719/B620
	RED FIRE Blue Fire Green Fire	Indiana	KSC953/JY79		Razorback Diamond		
	MIDDLE GROUND	Kentucky	KIG445/K53A	EIGHT	MAGNOLIA	Louisiana	KKI720/L11R
	Whirlaway Jet Pilot				Muskrat Pelican		
	RED ROBIN White Robin Blue Robin	Michigan	KQD405/0J3U		PUEBLO	New Mexico	KKI722/T865
	BLACKHAWK Gray Hawk Whitehawk	Ohio	KQD406/VX2G		Zuni Navajo		
	BADGER Scooter Buzzard	Wisconsin	KSC954/90ZI		SOONER	Oklahoma	KKI723/V92U
FOUR	SOUTHEAST	Knoxville, TN	Southeast 4/ KIJ960/4HRG		EAGLE NEST	Texas	KKI724/83CR
	GOLDEN ROD Hot Rod Ram Rod	Alabama	KIOG442/A62U		Gold Eagle Blue Eagle		
	SPARROW Crane Eagle	Florida	KIG444/IL9U		ROCKY MOUNTN	Salt Lake City	Rocky Mountain 28/KA1562/7V5A
	RED STAR White Star Blue Star	Georgia	KIG443/EJ1G		PIKES PEAK	UT Colorado	KAF357/DI13
					Red River Blue River		
					MAGPIE	Idaho	KOP334/GQ7E
					Rabbit Hornet		
					FATHER	Montana	KOF426/P83W
					Mother Angel		
					UNCLE WILLIE	Utah	KOF429/89VX
					Uncle Mike Uncle Able		
					KING	Wyoming	KOF431/910Y
					Queen Jack		
					PACIFIC	Castro Valley	Northwind 8/ KMG664/BNIK
					SOURDOUGH	CA Alaska	KWA677/BE90
					Mukluk Aurora		
					EAGLE****	California	KME284/B650
					Black Bear Brown Bear		
					FIREBRAND	Hawaii	KUA341/F23I
					Mobile Hiboy		
					NORTHWIND	Nevada	KOP335/RQ29
					Yellow Jacket Red Spider		
					BEAVER FOX	Oregon	KOF428/XE7F
					Beaver Muskrat Beaver Bird		
					FIR	Washington	KOF430/9KYJ
					Maple Ash		
					* former call sign: RED DOG		
					** former call sign: KIDDIE CAR		
					*** former call sign: LOWLAND		
					*** former call sign: WHITE BEAR		
						NB: communications are by Tactical Call Sign followed by mobile, air mobile or air. Packet and RTTY use state abbreviation plus four-digit call sign.	

The Air Force views CAP as a valuable asset with the ability to undertake airborne control of surface vehicles, do courier services, move packages to remote bases, act as communications relays, provide visual and photographic damage assessment, take on low level training route safety surveys, provide passive targets for radar installation flight tests, and participate in controller training missions.

Under the heading of "other missions," CAP has an agreement with the Customs Service to fly surveillance sorties as their "airborne eyes" in the war against drug traffickers. Since members have no law enforcement powers, they do routine reporting only and are never "in on the kill."

They maintain a command structure communications network using radio stations in the fixed-land, mobile-land, mobile-water, and air-mobile services segments of the RF spectrum. Frequencies allocations have been made by the FCC and Air Force and transmissions are restricted to official business.

QSLING CAP Communications

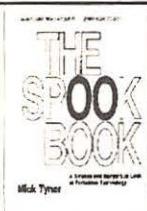
Radio communications between headquarters and regional offices utilize Air Force radio operators and Air Force frequencies. Regionals network with their respective wings using both AF and CAP frequencies and CAP personnel. Group and squadron transmissions are "in the clear" on USB, though occasionally the LSB is used.

These communications teach squadron members how to run a network efficiently. They also represent a great way for DXers to log some great catches.

However, CAP's confirmation policy remains as muddled as the Air Force's. The Public Affairs Office at Maxwell views DXers at best as a nuisance and at worst as closet subversives. Yet, a significant number of CAP radio specialists also like monitoring.

So, the best verification route is through the squadron or wing communications officers and hope for a kindred soul. With 3,843 fixed land; 17,950 ground mobile; 5,761 air mobile; 1,408 search and rescue; 540 corporate aeronautical; 323 repeaters, and 286 emergency locators transmitters in service, there are a lot of DX bones to chew on.

Some of the latest CAP statistics are quite impressive. In 1989, 67,339 members paid dues for the right to log 2,681 missions; 10,192 sorties and 21,114 air hours; make 1,909 finds; and save 65 lives. Thousands of other hours went unreported, being credited to state and local support activities.



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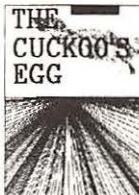
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Squadrons responded to Hurricane Hugo, the San Francisco earthquake and Red Cross blood and tissue transportation flights, missing persons overflights, medevac missions and treetop rescues. They also flew 2,204 Customs Service missions and helped conduct SAR awareness symposiums throughout the country.

Scratch almost any aeronautical situation and you'll find the Air Force has a good thing going with the CAP.



Sources: Public Affairs Office, Civil Air Patrol; Maxwell Air Force Base, AL; ShortwaveDirectory, Bob Grove, 1990; and The 'Top Secret' Registry of U.S. Government Radio Frequencies, Tom Kneitel, sixth edition, copyright 1987.

MONITORING CUBA -- To and Fro

by J. J. Jessup

It is a safe bet to say that Fidel Castro is probably not sleeping well these days. The past year and a half have not been good to him or to his "Breshnevian" government in Cuba. He has watched as the governments of Eastern Europe cracked, then crumbled and collapsed. And if that were not enough, he is confronted daily with the turmoil in his once-proud mentor, the Soviet Union.

The USSR's economic crunch has forced it to reduce its aid to Cuba. As of this year, the Russians will no longer barter goods to Cuba -- from now on they will accept only hard currency, something not easy to come by on this Caribbean island. The Cuban people have already been warned that even tougher times await, while Castro tries to promote other markets and hopes building more hotel rooms will bring in the tourists.

In Florida, where the majority of the one million Cuban-Americans live, the death-watch is on. Though some thought

that the winds of freedom would have blown from Eastern Europe straight through to Cuba, most experts believe it's going to take more time, even with growing economic problems on the island. Castro's was a revolution from within, supported by the populace, unlike the communist governments of Eastern Europe which were imposed from outside. Still, the fall of Fidel remains a question of when, not "if."

For the shortwave listener, it is not hard to detect the quickened pulse of the anti-Castro elements as they sense the end of their long campaign. For the past year or two there has been a significant increase in the number of anti-Castro voices we hear on the shortwaves. There are half a dozen or so active now, and indications of more to come if the target stays in position long enough. That's about as many as existed in the late 1970s and early '80s -- the last peak in the curve of anti-Castro activity.

Since the Cuban voices both to and from the island can be expected to change

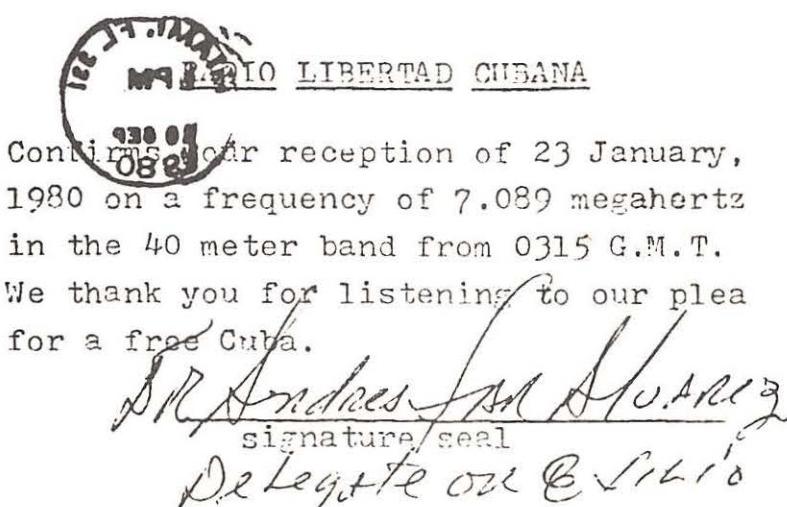


Fidel: How much longer?

dramatically once Fidel is gone, shortwave listeners may want to get in on this bit of radio history while it is still there to be heard.

If you haven't already heard Radio Havana Cuba, well, you just aren't turning on your radio. Outside of the powerhouse U.S. shortwave stations, RHC is one of the hemisphere's most extensively operated and best-heard shortwave stations. It broadcasts on some two dozen frequencies in the 49 through 16 meter bands (5950 - 17700 kHz), beaming to North, Central and South America as well as the Caribbean, Europe, the Mideast and Africa. Program languages are Spanish, English, Portuguese, French, Arabic, Creole and Quechua. Most of the frequencies in use for broadcasts to Europe and the middle east are relayed over transmitters located in the USSR.

Eight hours a night are devoted to English programming for North America: 0000-0600 on 11820, 0200-0450 on 9710 and 0600-0800 on 11835. Also easily heard is English for the Caribbean between 0400-0600 on 5965 and 11760. It's also interesting to tune the broadcasts in Creole (0200-0300 on 11760 and 2000-2100 on 5985) and Quechua at 1000-1050 on 11760.



QSL from an anti-Castro station active ten years ago -- Radio Libertad Cubana.

Radio Havana Cuba is a good QSLer, though sometimes slow to respond. The address is P.O. Box 7026, Havana. Don't ask this dinosaur for anything other than a QSL card, though. They seem unable to deal with even the simplest question.

As noted above, Soviet transmitters relay some RHC broadcasts. The tradeoff of that arrangement is the Cuban-based USSR relay operating on 4765 kHz (which does drift up and down the band a bit). This channel carries various USSR home services as well as Radio Moscow's Spanish programming during its 24 hour per day schedule. Radio Moscow can usually be persuaded to QSL this facility.

Another Cuban station which has been active on shortwave for several years now is Radio Rebelde, one of the country's national radio networks. This one operates with 50 kilowatts on 5025 between 1000-0500 and is easily heard during our evening hours. A second channel, on variable 3359, opened last February and runs 24 hours a day relaying, as does 5025, Rebelde's mediumwave (AM) programming. The station QSLs from this address: Apartado 6277, Havana 6.

Before Castro came to power, Cuba had several private broadcasters who, in addition to their mediumwave stations, operated on shortwave. It's possible that, come a market-based economy, a few such stations might show on shortwave again one day.

The US government has had its hand into anti-Castro broadcasting on at least one occasion before it created Radio Marti. Radio Swan/Radio Americas -- active from Swan Island off the coast of Honduras in the early 1960s -- was a CIA operation. Radio Marti, however, is a fully overt effort, a sort of Cuban version of Radio Free Europe. Begun in 1985, Radio Marti uses the facilities of the Voice of America

Members of Alpha 66, which operates La Voz de Alpha 66, demonstrate in support of a free Cuba.



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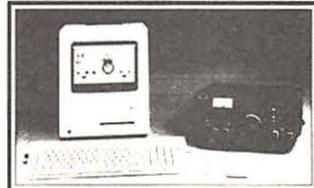
Its all-Spanish programming airs on 9525 between 2300-0400, 6075 from 1030-1200, 9570 at 1200-1400 and 11930 from 1400-2300. Radio Marti confirms reports with a QSL card and the address is Radio Marti, Washington, DC 20547.

Of the several unofficial anti-Castro voices, the longest running of the current crop is La Voz del CID, operated by the group Cuba Independiente y Democrática and headed by Huber Matos -- a former Castro bigwig who turned against Fidel and spent many years in jail in Cuba.

La Voz del CID has been on the air for a decade now. Its first broadcasts were made from sites within the US and it was eventually closed down by the FCC. Since then operations have been moved out of the country and are now believed to be based in Guatemala. For a time CID aired a number of different program services, aimed at various segments of the Cuban

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President Reagan at a gathering of the Cuban American National Foundation, which airs La Voz de Fundacion over WHRI.

population. One service aired over Radio Clarin in the Dominican Republic and another was carried by Ecos del Torbes in Venezuela.

Currently, La Voz del CID has two services: Radio Camilo Cienfuegos which airs on 9941 variable between 0930 and 0210 and 6305 from 0210 to 0930. Radio Antonio Maceo uses 11635 from 1100-2300 and 7340 between 2300 and 1100. The station has an attractive QSL card and will gladly specify which of the two services you picked up. CID has several offices but most consistent replies seem to come from the one in Costa Rica. Write Apartado 8130, 1000 San Jose. English reports are acceptable.

Radio Caiman is an on-going mystery which has puzzled listeners since it went on the air with six months of test broadcasts in the spring of 1985. No announcements were aired until regular programming began in the fall.

Eventually, *Monitoring Times* columnist John Santosuosso made contact with a group calling itself "Pro Libertad de Cuba" which claimed to operate the station but the contact was brief and tenuous. Other information pointed to a transmitter location near Guatemala City. But, aside from the station name, we don't really know anything else for sure -- not where the transmitters are nor what group runs it nor where it is based. No address has ever been uncovered so there is no way to reach this

station with a reception report.

You can hear Radio Caiman easily enough, though. Just tune 9965 between 2300-0400 or 1100-1500. All broadcasts are in Spanish and consist of a lot of music.

The Cuban-American National Foundation began its La Voz de Fundacion broadcasts via Radio Clarin in the Dominican Republic after Clarin moved to 9940 from its long-used 11700 frequency. The arrangement was discontinued after the Cubans complained to the Dominican Republic about the use of 9940. Clarin went off the air, planning a move to 9840, but has never returned.

Fundacion, finding itself without access to transmitters, wound up buying time on religious station WHRI in Indiana. La Voz de Fundacion is scheduled weekdays between 1300-1400 on 9495 and 11790 and 0200-0400 on 7315 and 9495. Verifications are issued from CANF's Miami office. Write to P.O. Box 440069, Miami, 33144.

Alpha 66, led by Dr. Diego Medina, has had several runs of its La Voz de Alpha 66 on shortwave. Years ago it had a transmitter operating in the area around 7080 until the FCC closed it down. Some years later the station returned with a three nights per week schedule on 6666 but this was eventually closed down by the FCC too.

La Voz de Alpha 66 made its most recent appearance last summer. Following

the lead of CANF it bought time on WHRI and now airs its views without having to worry about the FCC. Broadcasts are aired Tuesday through Saturday (UTC) at 2330-0000 on 13670 and 17830, repeated the next morning at 1130-1200 on 9465 and 11790. A letter and an attractive QSL card are sent for correct reports. The address is P.O. Box 420067, Miami, 33142.

Beyond these main anti-Castro shortwave voices, there are others which make only the brief, occasional appearance or are rumored to be active or to be coming on the air. Radio Siboney is said to be aimed at Cubans stationed in Africa and to be active on 6100 between 1900-2030. Although there have been one or two reports of it having been heard in Africa, none very recently, it has not been logged in the US. Letters to the address given for the station: Centro del Pueblo de Cuba, P.O. Box 450214, Miami, 33245, have been returned.

Last summer Florida monitors observed a brief appearance by a station identifying as Radio Cuba Libre, which aired a series of five minute broadcasts on 7100 over one or two evenings, but nothing further has been noted. The area around 7000-7100 has long been a favorite of anti-Castro groups apparently using converted ham rigs so this is a good frequency range to check as often as possible for suspicious signals.

Last May a group calling itself Partido Independentista Cubano claimed to have made a series of hourly broadcasts on the 20th of that month, using frequencies in the 20 and 10 meter amateur bands but, so far as this writer knows, there were no reports of anyone hearing the broadcasts on that date or since.

The Comite Cubano por Derechos Humanos (Cuban Committee for Human Rights) says it is seeking FCC approval for a 5 kilowatt shortwave station which would operate from Miami, beaming into Cuba four hours a day. Programs would focus on education, information and human rights issues.

It is not improbable that the more Castro is perceived to be losing his grip on Cuba, the more additional anti-Castro voices may be heard on the air. An increasing number of groups can be expected to want to get their two cents worth in while there's still time. So we can look for some very interesting listening ahead as we come closer and closer to the end of a radio propaganda war that has continued for over three decades.



The ICOM EXPERTS

Minutes From
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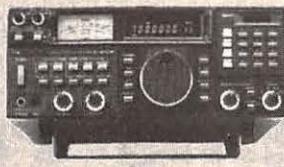
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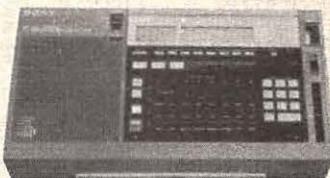
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Whether you use this as an indispensable update to maritime monitoring or as a cure for insomnia, be aware; coastal/ship frequencies are making sweeping changes.

Changing Partners

by Everett L. Slosman

The new year will bring changes to the allocation of maritime radio frequencies -- changes the FCC described as "wholesale." Formally titled "Frequency Changes for Maritime Mobile Stations," government expects to institute these changes to the shortwave maritime frequencies this summer, specifically at 0001 hours, July 1, 1991.

Those who make their living at sea will have to reset radios, replace crystals, and replace current on-board frequency lists. DXers, on the other hand, can rewrite their notebooks and reprogram receiver settings at their leisure, a far less costly set of procedures.

Last year, the FCC published the Public Notices in the *Federal Register*. However, the change proposals were not well publicized and it was only through a chance conversation I became aware of the situation.

This lack of publicity may be the key reason that few people took advantage of their right to respond during the time period allotted.

Now, according to Kathryn S. Hosford, electronics engineer for International Negotiations at the FCC, the final frequency assignments will be made in December and she believes few modifications will be made to the Public Notice lists.

They say, in clear bureaucratic style, "These changes are required to conform our rules to revisions of the International Radio Regulations adopted by the Final Acts of the World Administrative Radio Conference for the Mobile Services, Geneva, 1987."

What the FCC means is spectrum modifications are needed to accommodate growth in the maritime mobile, satellite, and radio navigation systems as well as implementing the Global Maritime Distress and Safety System (GMDSS).

Because these changes affect simplex and duplex services, the easiest way for DXers to follow almost 50 pages of official jargon and multiple-document cross-references is to break the new allocations into compact comparative matrices.

A good place to start is with marine DXing's favorite -- the distress and safety

frequencies. Those frequencies not modified have been included in these three tables.

Distress/Safety Frequencies

Radiotelephony

Current	Future
2182.0	2182.0
4125.0	4125.0
6215.5	6215.0
8257.0	8291.0
12392.0	12290.0
16522.0	16420.0

Narrow-band Direct-printing (NBDP)

2174.5	2174.5
4177.5	4177.5
6268.0	6268.0
8357.5	8376.5
12520.0	12520.0
16695.0	16695.0

Digital Selective Calling (DSC)

2187.5	2187.5
4188.0	4207.5
6282.0	6312.0
8375.0	8414.5
12563.0	12577.0
16750.0	16804.5

Nine frequencies assigned to coastal stations using Morse (A1A and J2A modes) for working transmissions will be repositioned.

Coastal Working Freqs (Morse)

Current	Future
16861.7	17199.s
16871.3	17208.8
16880.9	17218.4
22318.5	22569.0
22348.5	22599.0
22407.0	22567.0
22413.0	22663.5
22425.0	22675.5
22431.0	22681.0

The worldwide calling frequencies for ships using Morse and crystal controlled oscillators have been assigned new initial and



Maritime CW operator/Photo by Brian Webb

alternate channels.

Calling Frequencies

Initial	Alternate
4184.0	4184.5
6276.0	6276.5
8368.0	8369.0
12552.0	12553.5
16736.0	16738.0
22280.5	22281.0
25172.0	25172.0

Additional frequency reassignment will be done by region.

Atlantic-Caribbean

Initial	Alternate
4182.0	4182.5
6277.0	6277.5
8366.0	8366.5
12550.0	12550.5
16734.0	16734.5
22279.5	22280.0
25171.5	25171.5

Gulf of Mexico

Initial	Alternate
4183.0	4183.5
6278.0	6278.5
8367.0	8367.5
12551.0	12551.5

16735.0	16735.5
22281.5	22282.0
21171.5	21171.5

Northern Pacific

Initial	Alternate
4185.0	4185.5
6279.0	6279.5
8368.5	8369.5
12552.5	12553.0
16736.5	16737.0
22282.5	22283.0
25172.5	25172.5

12422.0 to	12476.5
16619.0 to	16683.0
22242.0 to	22277.0
25161.5 to	25171.0

General purpose DSC frequencies have been assigned in worldwide coastal/ship pairs.

DSC Pairs

455.5/458.5
2177.0/2189.5
4219.5/4208.0
6331.0/6312.5
8436.5/8415.0
12657.0/12577.5
16903.0/16805.0
19703.5/18898.5
22444.0/22374.5
26121.0/25208.5
156.525 MHz (simplex)

Southern Pacific

Initial	Alternate
4186.0	4186.5
6280.0	6280.5
8370.0	8370.5
12554.0	12554.5
16737.5	16738.5
22283.5	22284.0
25172.5	25172.5

The working frequencies for ships using Morse will run in 0.5 kHz increments from:

Ships' Working Freqs (Morse)

4187.0 to	4202.0
6285.0 to	6300.0
8342.0 to	8376.0

East Coast, Gulf of Mexico and Caribbean assignments have been modified by raising the worldwide frequencies by 0.5 kHz in the 4,6, 8, 12, 16, 19, 22, and 26 MHz bands. Other areas have been similarly assigned by raising the frequencies an additional 0.5 kHz. For example, worldwide 4219.5 becomes 4220.0 on the eastern zones and 4220.5 in other areas.

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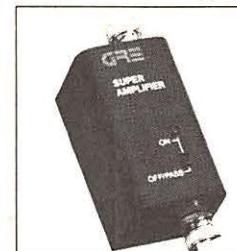
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Table 1
Changes in NBDP and Data Transmission Frequencies

Channels	Coast*	Ship*	Shift	To
1 -- 14	4350.0 - 4356.5		down 139.5 kHz	4210.5 - 4216.5
	4170.5 - 4177.0		up 2.0 kHz	4172.5 - 4179.0
Exception: channel 11 moves from 4355.0/4175.5 to 4217.0/4179.5.				
1 -- 23	6494.5 - 6505.5		down 180.0 kHz	6314.5 - 5325.0
	6267.5 - 6267.5		up 6.5 kHz	6263.0 - 6274.0
Exception: channel 11 moves from 6499.5/6261.5 to 6325.5/6274.5.				
2 -- 27	8705.5 - 8718.0		down 288.5 kHz	8417.0 - 8429.5
	8344.5 - 8357.0		up 42.5 kHz	8377.0 - 8389.5
Exception: channel 1 moves from 8705.0/8344.0 to 8430.0/8390.0				
1 -- 57	13071.5 - 13099.5		down 49.2 kHz	12579.5 - 12607.5
	12491.5 - 12519.5		down 14.5 kHz	12477.0 - 12505.0
1 -- 69	17197.5 - 17231.5		down 390.5 kHz	16807.0 - 16840.5
	16660.5 - 16695.5		up 23.0 kHz	16683.5 - 16717.5
Exception: channel 24 moves from 17209.0/16672.0 to 16902.5/16784.5.				
1 -- 67	22561.5 - 22594.5		down 185 kHz	22376.5 - 22409.5
	22192.5 - 22225.5		up 92 kHz	22284.5 - 22317.5

* Coastal frequencies in .5 kHz increments

* Ship's frequency in .5 kHz increments

The changes for NBDP and data transmission pairs can be calculated using the shifts outlined in the matrix provided in Table One.

Radio telephony Call and Reply duplex channels will undergo these shifts.

Radiotelephony Duplex Call and Reply

Existing	New
Coast/Ship pair	Coast/Ship pair
8780.9/8257.0	8779.0/8255.0
13162.8/12392.0	13162.8/12290.0
17294.9/16522.0	17302.0/16420.0
22658.0/22062.0	22756.0/22060.0

These next tables show the reassessments of the regional Public Correspondence Radiotelephony duplex pairs.

Public Correspondence

Existing	New
Coast/Ship pair	Coast/Ship Pair

East Coast

4363.6/4069.2	4363.0/4071.0
4385.3/4090.9	4384.0/4092.0
4388.4/4094.0	4387.0/4095.0
4391.5/4097.1	4390.0/4098.0
4403.9/4109.5	4402.0/4110.0
4407.0/4112.6	4405.0/4113.0
4422.5/4128.1	4420.0/4128.0
4425.6/4131.2	4423.0/4131.0
8722.0/8198.1	8722.0/8198.0
8731.3/8207.4	8731.0/8207.0
8740.6/8216.7	8740.0/8216.0
8746.8/8222.9	8746.0/8222.0
8749.9/8226.0	8749.0/8225.0
8759.2/8235.3	8758.0/8234.0
8762.3/8238.4	8761.0/8237.0
8793.3/8269.4	8791.0/8267.0

West Coast
4357.4/4063.0
4403.9/4109.5
4407.0/4112.6
8728.2/8204.3
8743.0/8219.8
8759.2/8235.3
13100.8/12330.0
13103.9/12333.1
13107.0/12336.2
13187.6/12416.8
13190.7/12419.9

17236.0/16463.1	17245.0/16363.0
17239.1/16466.2	17248.0/16366.0
17304.2/16531.3	17311.0/16429.0
22636.3/22040.3	22735.0/22039.0
22664.2/22068.2	22762.0/22066.0
22679.7/22083.7	22777.0/22081.0
22704.5/22108.5	22801.0/22105.0

Gulf Coast

4366.7/4072.3	4366.0/4074.0
4369.8/4075.4	4369.0/4077.0
4397.7/4103.3	4396.0/4104.0
4413.2/4118.8	4411.0/4119.0
8790.2/8266.3	8788.0/8264.0
8805.7/8281.8	8803.0/8279.0
8808.8/8284.9	8806.0/8282.0
13134.9/12364.1	13110.0/12263.0
13175.2/12404.4	13149.0/12302.0
13178.2/12407.5	13152.0/12305.0
17251.5/16478.6	17260.0/16378.0
17329.0/16556.1	17335.0/16453.0
17356.9/16584.0	17362.0/16480.0
22676.6/22080.6	22774.0/22078.0
22689.0/22093.0	22786.0/22090.0
22707.6/22111.6	22804.0/22108.0

Great Lakes

4369.8/4075.4	4369.0/4077.0
4382.2/4087.8	4381.0/4089.0
4410.1/4115.7	4408.0/4116.0
8796.4/8272.5	8794.0/8270.0

Hawaii

4410.1/4115.7	4408.0/4116.0
8740.6/8216.7	8740.0/8216.0
13165.9/12395.1	13140.0/12293.0
17232.9/16460.0	17242.0/16360.0

Caribbean

6515.7/6209.3	6510.0/6209.0
6518.8/6212.4	6513.0/6212.0
17236.0/16463.1	17245.0/16363.0
17239.1/16466.2	17248.0/16366.0
22664.2/22068.2	22762.0/22066.0

Listed but unassigned

8725.1/8201.2	8725.0/8201.0
8737.5/8213.6	8737.0/8213.0
8784.0/8260.1	8782.0/8258.0

Some mobile maritime business and operational carrier frequencies have also been reassigned.

Mobile Maritime Business Freqs

Current	Future
2096.5	2096.0
4143.6	4146.0
4419.4	4148.0
6218.6	6224.0
6221.6	6227.0
6521.9	6230.0
8291.1	8294.0
8294.2	8297.0
12429.2	12353.0
12432.9	12356.0

12435.4	12359.0
16587.1	16528.0
16590.2	16531.0
16593.3	16534.0
22124.0	22159.0
22127.4	22162.0
22130.2	22165.0
22133.3	22168.0
22136.4	22171.0

Shipboard facsimile station transmissions have been given these revisions:

Facsimile - Shipboard

2070.5	2072.5
2074.5	2076.5
4154.5	4169.5
6235.5	6259.5
8302.5	8338.5
12370.5	12418.5
16551.5	16614.5
18847.5	18868.5
22181.5	22238.5
25123.5	25159.5

Meanwhile the shore facsimile counterparts will operate on these bands:

Shore

4221.0	to 4351.0
6332.5	to 6501.0

8438.0	to 8707.0
12658.5	to 13077.0
16904.5	to 17242.0
19705.0	to 19755.0
22445.5	to 22696.0
26122.5	to 26145.0

A segment of 4 MHz has been reserved for Alaskan private fixed station radiotelephony. The frequency changes are:

Alaska

Current	Future
4366.7	4366.0
4369.8	4369.0
4397.7	4396.0
4403.9	4402.0
4422.5	4420.0
4425.6	4423.0

Finally, simplex working carrier frequencies for the Mississippi River and connecting navigable waters will be given these new allocations:

Mississippi River

Current	Future
4063.0	4065.0
4087.8	4089.0
4115.7	4116.0
4410.1	4408.0

6209.3	6209.0
6212.4	6212.0
6515.7	6510.0
6518.8	6513.0
8201.2	8201.0
8213.6	8213.0
8725.1	8725.0
8737.5	8737.0
12333.1	12233.0
13103.9	13080.0
16518.9	16417.0
17291.8	17299.0

Data was extrapolated from these documents:

"Notice of Proposed Rule Making," PR Docket No. 90-133;

"Frequency changes for Maritime Mobile Stations Operating Public Correspondence Between 4000 -- 27500 kHz," Public Notice DA 90-408;

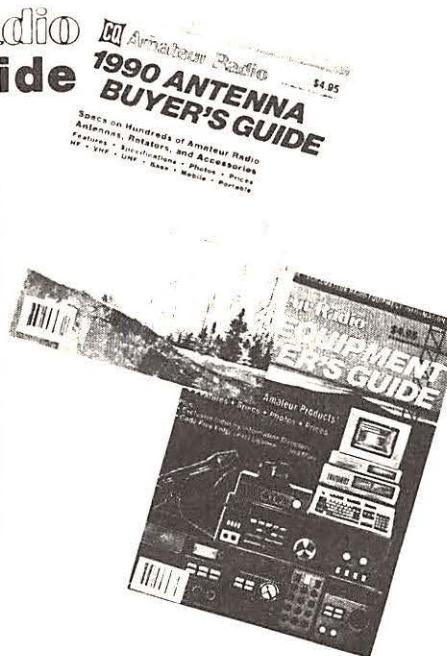
and "Frequency Changes for Maritime Mobile Stations Conducting Private Communications Between 4000 -- 27500 kHz, Public Notice DA 90-407."

You may want to obtain copies of these documents for your files or to be used as a cure for insomnia.

CQ Amateur Radio Buyer's Guide

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Always Enough Time in Korea

by William Heine Jr.

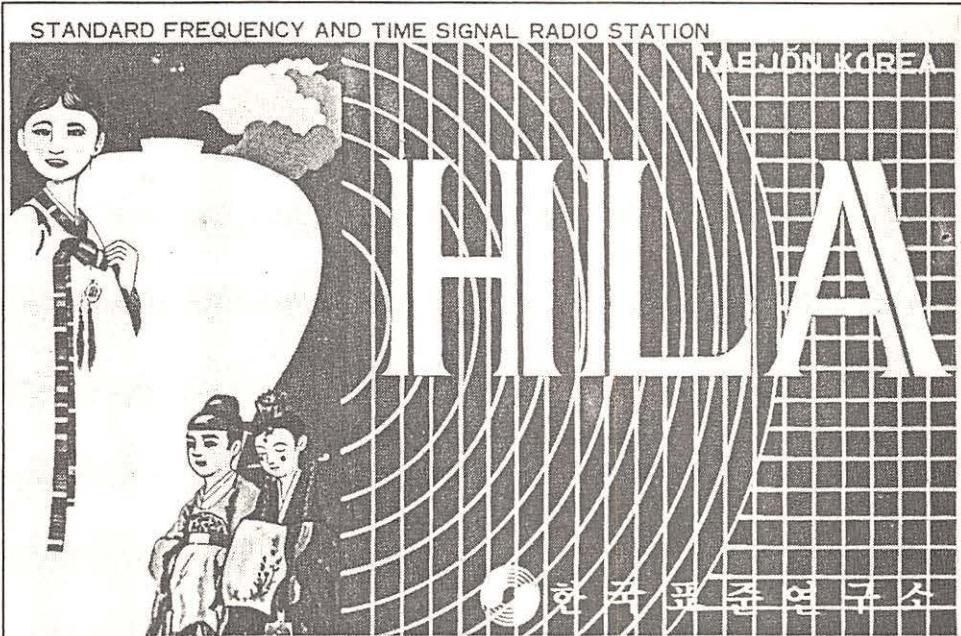
They are probably the dullest, yet most useful, stations on the shortwave bands. Formally known as standard frequency and times stations, these are the broadcasts that you hear making "pinging" or "pipping" sounds, like some sort of electronic clock.

In fact, that's exactly what they are: radio clocks, extraordinarily accurate ones at that.

The most common is the U.S. duo of WWV and WWVH, located at 2500, 5000, 10000, 15000, 20000 kHz on the radio dial. They're not hard to tune in. You can practically hear them on a toaster oven.

Other nations, such as Canada (CHU), China (BPM), Australia (VNG), Ecuador (HD2IOA), and Venezuela (YVTO), among many others, maintain their own standard frequency and time stations, but, as often as not, they are situated on the same frequencies as WWV/WWVH, making them rare catches except during the times when the U.S. stations are down for maintenance or periods of unusual signal propagation. During these occasions, listen carefully and you may hear the "ping" or "pip" of other stations.

Those stations that operate on frequencies other than those of WWV/WWVH are Brazil's Observatorio Nacional, which at one time was on 8712 kHz, Canada's CHU, an easy catch on 3330, 7335 or 14670 kHz, CBV-Chile on 4298 and 8677 kHz, China's BPM, which operates on 5430 kHz every second hour from 10000-



Only one listener in North America has reported hearing HLA. They give out an attractive QSL, but it's hard-won.

1800 UTC and on 9351 kHz every hour between 1100-2300, the Czech station OLB5 on 3170 kHz, and HD2IOA out of Ecuador on 3810 kHz from 0500-1700 UTC and 7600 kHz from 1800-0500 UTC.

There are others to try for as well: Hong Kong on 4232.5, 8539, 13020.4, 17096 and 22536 kHz, VWC, Calcutta on 4286 and 12745 kHz, Indonesia on 8542 and 11440 kHz and Japan's oft-heard JJY on 8000 kHz.

One station, heard by a North American monitor only once in all of recorded time, is South Korea's HLA. Intrigued by this teaser from the land of the morning calm, *Monitoring Times* reader William D. Heine visited the station.

HLA is located within Taedok Science Town, a large research and development complex adjacent to the city of Taejon, in central South Korea. It is run by the time and frequency laboratory of the Korea Standards Research Institute (KSRI), the equivalent of the U.S. National Institute of Standards and Technology (NIST), the people who operate WWV/WWVH.



One of the five cesium atomic clocks used to generate the UTC signal broadcast by HLA.

chief of the time and frequency laboratory.

Five Hewlett-Packard commercial cesium atomic clocks are used to generate the Coordinated Universal Time (UTC) signal which is broadcast by HLA. The clocks are continuously compared with other laboratories' clocks through the LORAN-C network. KSRI comparison with atomic clocks in Japan and Australia is achieved through use of the Geostationary Meteorological Satellite.



A KSRI Time and Frequency Lab technician works on the joint Japanese-Korean developed GPS interface prototype.

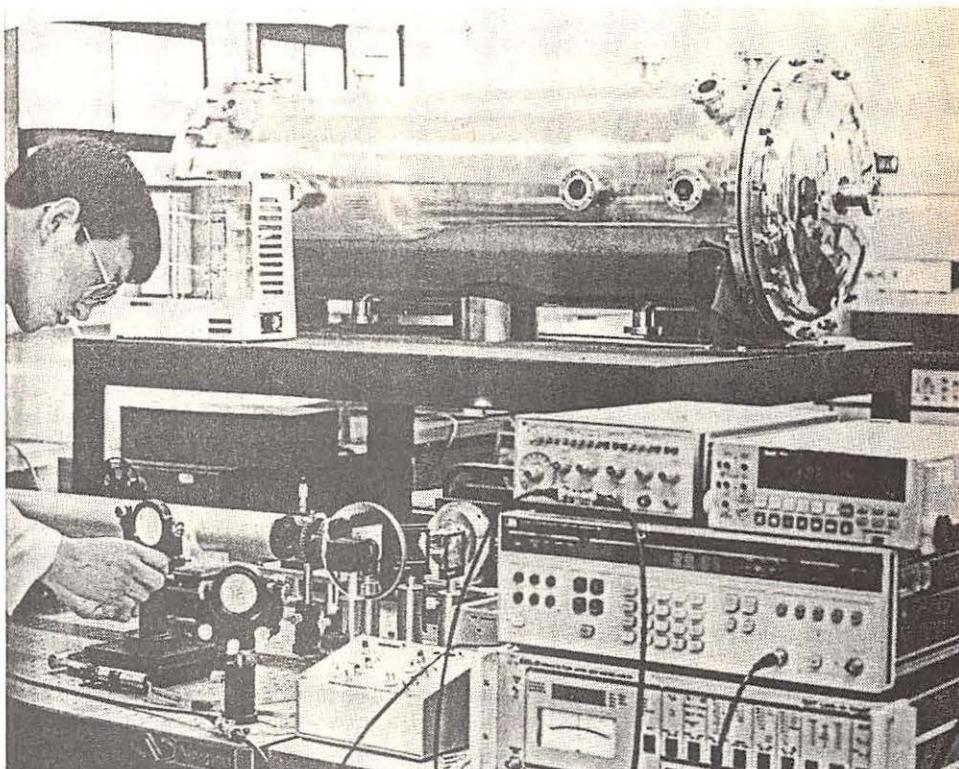
logical Satellite (GMS) system. Additionally, a device co-designed by the Japanese and scientists at KSRI's Time and Frequency Lab, allows comparison of their clocks with similar devices in Japan through use of Global Positioning System (GPS) satellites.

At the time of my tour, a five year project by KSRI scientists to build an improved laboratory cesium atomic clock was nearing the halfway point. KSRI is also responsible for broadcasting the Korea Reference Frequency (KRF), which is used to synchronize digital communications networks throughout Korea.

HLA is part of a network of 250 atomic clocks which provide data to the International Bureau of Weights and Measures (BIPM) in Paris for the generation of International Atomic Time (TAI). The Korean Broadcasting System (KBS) in Seoul uses one of KSRI's atomic clocks to generate the time signal heard during its conventional AM/FM broadcasts and on its shortwave transmissions.

Residents of five major metropolitan areas in South Korea can also dial 116 on any telephone for a recorded KSRI time announcement. The time signals generated by KSRI's atomic clocks are relayed the short distance from the Time and Frequency Lab to HLA's broadcasting facilities via conventional RG-58 coax.

HLA's time standard signal is characterized by pulses of 9 cycles of 1800 Hz modulation, with 29th and 59th second pulses omitted. A .8 second, 1500 Hz tone marks the beginning of each hour, while the beginning of each minute is marked by a .8 second 1800 Hz tone. Cassette driven automatic devices insert a female voice announcement in Korean



A new laboratory cesium atom clock is under development.

following the 52nd second pulse of each minute. BCD time code is given on a 100 Hz subcarrier.

HLA began broadcasting its standard time and frequency signal on 5.000 MHz on November 24, 1984. Broadcasts were initially limited to the hours of 0100 to 0800 UTC on weekdays. HLA's broadcast schedule was expanded to 24 hours on May 15, 1990.

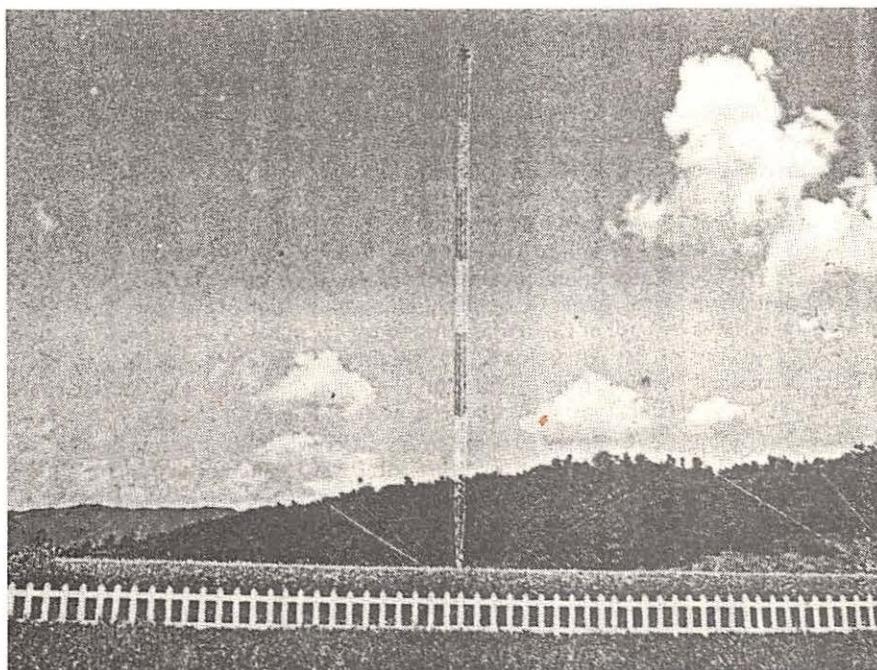
HLA facilities include a small broadcast

station which uses three 10 kW transmitters and a large vertical monopole antenna system equipped with a diamond shaped ground wave enhancement curtain. The antenna used by HLA can be adjusted to provide peak performance in the 2 to 30 MHz range.

The station offers an attractive QSL card in return for reception reports from listeners who are fortunate enough to log reception. This is indeed a task to try the patience of Job, however, since HLA's standard frequency of 5 MHz is used by many high power national time and frequency standard stations. Adding to the difficulty is the fact that only one of the station's transmitters, powered back to 2 kW, is used at any given time. The station receives an average of 100 reception reports each year. Only one report has ever arrived from the U.S.

Station officials did, however, indicate that listeners in western Europe had copied the station's signal. During the period of the station's fifth anniversary in 1989, an attractive brass and formica paperweight featuring a picture of HLA with the KSRI logo on the reverse was offered in return for reception reports.

Those wishing to contact the station can reach HLA personnel at the following address: Radio Station HLA, Time and Frequency Laboratory, Korea Standards Research Institute, P.O. Box 3, Taedok Science Town, Taejon, Chungnam 300-31, Republic of Korea."



HLA's HF antenna array, transmitting its 2 kW signal.

Shortwave Broadcasting

Glenn Hauser
Box 1684-MT
Enid, OK 73702

AFGHANISTAN (non) A new clandestine is Radio Mojahedin, 6140, at 0200-0330 and 1230-1400, against the present government, with a Peshawar, Pakistan address (BBC Monitoring)

ANTIGUA After years of coincidental Chinese jamming on 11775, BBC finally moved its Antigua relay at 1100-1330 (later on Sundays) to 15220; *London Calling* says it's for Caribbean, Central and South America, but a site schedule shows the 250 kW transmitter is split into two equal beams, one toward Caracas and Lima, the other toward Miami, Houston, El Paso and San Diego (*World of Radio*) To get a proper QSL from the BBC Antigua relay in December and January write to BBC Radio Action, Bush House, London (*Play-DX*)

Regarding the SSB relays on 4588, 9115 and 15780, currently the only one authorized is Radio Continental; other stations are relayed without permission as a program source to small stations in the interior. These include Radio Mitre, Radio Del Plata, Radio Rivadavia, some of which will nevertheless verify correct reports (Julian Anderson, *Pampas DX-ing!*)

RAE has made its usual one-hour shift due to summer time, so English is temporarily at 1800 on 15345, 0100 on 11710, weekdays only (Gabriel Ivan Barrera, *Onda Corta*)

AUSTRALIA Radio Australia has a new mailing address, apparently having moved to a new building: P.O. Box 755, Glen Waverley, Victoria 3150. Phone +61 3 881 2222. Cricket test match broadcasts this summer use 15530, 15240, 11880, 21525 and 21775 starting at 0100 UTC on Dec. 26-30, Jan. 4-8, 25-29, all against England but originating in Melbourne, Sydney and Adelaide, respectively; length varies until 0630, 0700 or 0730 depending on date and frequency; and Feb. 1-3, 5 and 6 from Perth starting at 0230 until 0630, 0800, 0900 or 1030 (*World of Radio*)

Radio Australia's - SUMMER OF CRICKET 1990 / 1991



Test Match Broadcasts

FIRST TEST AUSTRALIA v ENGLAND	
Date :	23rd - 27th November 1990, inclusive
Location :	Brisbane
Match times :	Start 2300 UTC (1000 Local) Finish 0645 UTC (1745 Local)
Broadcasts:	Central Pacific 15530 kHz .0100 - 0630 UTC

BELIZE State radio has become a corporation and the opposition has the right to name candidates for director; all censorship is condemned in new communications legislation, the most progressive among English-speaking Caribbean-area nations. Director-General Rene Villanueva, who started as an announcer in 1968, says control of radio is now in the people's hands. The Belize Broadcasting Network (BBN) has become the Broadcasting Corporation of Belize (BCB), employing 75 people. The mediumwave (and occasional shortwave 3285) outlet is still called Radio Belize, 19 hours per day; Friends FM is 24 hours with music; TV has eleven low-power transmitters around the country; is semi-commercial, also getting state aid (Radio Nederland *Radio-Enlace*)

BOLIVIA The La Paz government is considering the position taken by the trade organization Camara Nacional de Organizaciones de Medios de Comunicacion, for regulation of radio and TV. Ministerio Boliviano de Transportes y Comunicaciones resolution gives unlicensed stations 120 days to submit proper paperwork (RN *Radio-Enlace*)

A lot of shortwave stations are already inactive, for technical, political, or economic reasons, and some may be gone for good. Inactive in the Sucre area are: 3372.3, Radio Nuevo Mundo; 3330.0, Radio Charcas; 4935.1, Radio CORDECH; around Potosi: 3200, Radio 9 de Abril; 3380.0, Radio Cumbre, La Voz del Trabajador del Bismuto;

5010v, Radio Litoral; 5020.1, Radio Cuarto Centenario; 5910, Radio El Espectador; 5925, Radio Centinela; 6082, Radio 21 de Diciembre; 6175, Radio Indoamerica; in Oruro: 4755, Radio Emisoras Bolivia; 4980, Radio Batallon Topater; 5985, Radio San Jose; 6069, Radio El Condor. In other provinces: 6327, Radio Emisora 27 de Julio.

Monitored and announced schedules of active stations: 3390.3, Radio Emisoras Camargo, 2300-0300 and not confirmed in the morning; 9717.1, Radio La Plata, Monday-Saturday 1400-1900, Sunday 1400-2200. 4991.1, Radio Animas, 1030-1800 and 2100-0100 Monday-Saturday, unchecked Sunday. 5953.9, Radio Pio Doce, 0900-0400. 4810, Radio Difusora Libertad, 1000-1700 and 2100-0100, except Sunday 1000-2100. 4865, Radio 16 de Marzo, Monday-Friday 1000-0100, Saturday and Sunday 1000-2300. 5965, Radio Nacional de Huanuni, Monday-Saturday 0930-0200; Sunday 1100-2200. (Takayuki Inoue Nozaki, visiting Bolivia, *Relampago DX* via *Radio Nuevo Mundo*)

Radio Altiplano is reactivated on 5044.9, heard at 2344-2400 (Pedro F. Arrunategui, Peru, via Dario Monferini)

BRAZIL Radio Nacional has expanded its external services to 80 minutes each. English at 1200 to North America on 11745; 1800 to Europe on 15265 (Tony Jones, Paraguay, *Radio Nuevo Mundo*) The former is blocked by HCJB; changing the time by 10 hours but keeping the same frequency demonstrates poor comprehension of propagation and frequency management; are they not aware that their relay of Switzerland at 0200 works fine on 17730?

After reports that both frequencies are interfered, RNB asked listeners for band and frequency recommendations in the 1800-1930 and 1930-2100 UTC periods (Bob Thomas, CT)

BULGARIA Rumen Pankov and another DXer joined the Danish Shortwave Clubs International in 1974; late that year they were arrested by the Bulgarian KGB for contributions to *Sweden Calling DXers* and membership in "western espionage DX clubs". Released in May 1979, but unable to resume hobby until fall of the dictatorship in November 1989. They would like to thank DXers abroad for their support (*SCDX*) Count our blessings

CAMBODIA (non) Voice of the National Army of Democratic Kampuchea, 5408, heard from around 1000 to 1600, all in Khmere, except Vietnamese which has been moved from 1400-1430 to 1530-1600 (Isao Usgusa, *Radio Japan DX Corner*)

CANADA Eliminating Radio Canada International is at the top of CBC's budget-cutting priorities; this would save \$15 million. Support from listeners abroad could save RCI. A decision may be made by the end of December in order to give the required three months notice to union employees before the end of the fiscal year March 31. Please write to the Right Honorable Brian Mulroney, Prime Minister, House of Commons, Ottawa (or fax him at 613-957-5636), with copies to Rt. Hon. Joe Clark, Minister of External Affairs, and Rt. Hon. Marcel Masse, Minister of Communications, also at the House of Commons; and a copy to RCI, Box 6000, Montreal.

Contrary to some listings, CKZU, 6160, Vancouver has been 24 hours for about two years; after CBU simulcast signs off, CKZU picks up the all-night rock show from the stereo network (Rick Matthew, CBC Vancouver) That's *Brave New Waves* from 0900, except weekends, *Nightlines*; 6160 also has separate programming from CBU after 0405. The signal is aimed up the BC coast (Matthew, via Bruce MacGibbon, *Radio Japan DX Corner*)

CHU has unexpectedly shifted from 3330 to 3333 on several occasions. Look out for DX on the cleared frequency, such as RWANDA (Don Moore, Chuck Bolland)

CHILE Correct name of the station on 5825.1 kHz is Radio

**RADIO
TRIUNFAL
EVANGELICA
5.825 KHZ SW**

Triunfal Evangelica; earlier misunderstandings as Central, or Yuncal due to poor enunciation of announcer. Schedule is Monday, Tuesday, Wednesday, Friday, Saturday at 2200-0200 variable, with 50 watts, plans to increase to 500; home-made transmitter uses 807 and 6146 tubes; first anniversary is January 5 (Gabriel Ivan Barrera, after visiting the station, *Onda Corta*)

Radio Esperanza, 6088.6, heard on a Sunday from 0600 past 0730 with religion in Spanish, probably all night; not on weekdays (Ernie Behr, Ont., *DX Listening Digest*)

CHINA Stations on 2340 and 2475 kHz boom in at 1330, sounding like much more than listed 10 kilowatts (Mike Fern, CA, RCI *SWL Digest*) Some regional schedules: Jiangxi PBS, Nanchang, 2105-1500 on 5020, 2445 including half-hour English lessons daily at 2130 and 1330. Sichuan PBS, Chengdu, 7225 and 6060 at 0345-1515 and 2155-0135 with English lessons at 1130; second program partly in Tibetan and Yi on 5900 at 0950-1315 and 2150-0530. Guizhou PBS, Guiyang, also on 7225, and 3260 at 0150-0600, 0850-1605, with English at 0530 and 1430 (BBC Monitoring)

COSTA RICA With new transmitter site operations in January, Radio for Peace International's expanded schedule, including morning broadcasts, will add a new program covering Central American current events. The new free-standing tripod tower will be 120 feet high, with bases 16 feet wide. A new local FM feeder is on 107.5 MHz. Dedicated fax number 24 hours is 506-49-19-29 (*RFPI Mailbags*)

TIAWR says four new transmitters will be installed by January, two 50 kW, two 20 kW, to operate on 25, 31, 49 and 60 meter bands (Ernie Behr, Ont., *World of Radio*)

Radio Casino, "La Reina del Caribe," Limon, 5953, has English daily at 2300-2400 and (unconfirmed) at 0400-0600; also religious shows Friday 1330-1400, Sunday 1200-1230 and 1330-1400 (Tetsuya Hirahara, *TICO-DXing*, via *Radio Nuevo Mundo*)

CYPRUS Two new out-of-band BBC frequencies are from this relay, 15590 at 0300-0330 and 0400-0730; 15575 at 0945-1515 (Chris Evans, *WDXC Contact*) BBC's *Waveguide* devoted an entire show to OOB, but never got around to mentioning that BBC itself is a major OOB broadcaster, nor exactly where the band edges lie!

CZECHOSLOVAKIA RPI plans to gradually expand its 15-minute broadcasts to 30 (Peter Skala, *RN Media Network*)

ECUADOR HCJB's *DX Partyline*, expanded to 45 minutes, now starts Saturdays at 0737, 1007, 1907; Sundays 0037, 0237, 0507. During January and February, *DXPL* will continue its close look into Costa Rican radio and visit several stations in Ecuador. Regular features: Jan. 5 and Feb. 2, radio stamps; Jan. 12 and Feb. 9, Ontario DX Association; Jan. 19 and Feb. 16, Arthur Cushing, SPEEDX; Jan. 26 and Feb. 23, SPARC and EDXC.

Other features start 18 minutes later than *DXPL*. *Ham Radio Today*, tentative topics on Wednesdays: Jan. 2, propagation, antennas, handie-talkies; Jan. 9, ionization, EMF wave fundamentals, setting up your station; Jan. 16, D-layer, frequency and wavelength, operation on hambands; Jan. 23, E-layer, radio bands, SSB transmitter update; Jan. 30, digital modes special report. Tuesday, *Happiness Is*: Jan. 1, touring Quito on New Year's Day; Jan. 8, Ecuadorian customs; Jan. 29, touring a typical market, street sounds. The Mideast broadcast at 1630-1715 on 21480 features *Quito Calling* on weekends, with a DX segment Sunday around 1640 (HCJB)

A joint *Ham Radio Today/DX Partyline* call-in is planned for Saturday night, Jan. 19. HCJB now has a signature melody, *Great Is Thy Faithfulness* (from Lamentations 3), aired on certain frequencies at 0125, 0725, 1125, 1625, 2155, 2355 (Rich McVicar, *DXPL*)

Radio Cumanda is heard evenings until about 0400 on 3332-

variable; reactivated are La Voz del Rio Tarqui, 3285 at 2330; La Voz de Saquisili, 4900 at 1100 (ibid.)

EQUATORIAL GUINEA Radio Nacional on 5003.8 at 2140 one day, the next on 5003.1 (Ed Chichorek, NJ) Earlier was active on 4925.59 until 2206 (Chuck Bolland, FL) On new 4792.4 until 2203, strong (Terry Krueger, FL, *Fine Tuning*) That's half of a Radio Africa frequency, 9585, no accident (gh) Radio Africa, Bata, on 7188.66 from 2100 English religion to 2306, weaker than Malabo on 6250.31 in Spanish until 2203, both on a Saturday (Ernie Behr, Ont., RCI *SWLD*)

ESTONIA Frequency for Nadezhda, mentioned last month, is 12055 (Anatoli Klepov, USSR, *WDXC Contact*)

FINLAND Seemingly oblivious to Radio Finland and its would-be American listeners, VOA occupied both YLE's long-stand frequencies 15400 and 21550, for expanded mideast services, English until 1300, then Arabic.

FRANCE RFI dropped the 0315 broadcast in English to North America in order to give half an hour more to India, expanding the 1400 broadcast until 1455 on 21770 (Simson Najovits, RFI, RCI *SWLD*) Also audible here, often echoey.

GERMANY After taking over RBI facilities, DW is no better heard in Japan, but the station name now translates as "Radio Germany International" (Y. Kobayashi, JSWC via *Radio Japan DX Corner*)

GUAM KTWR's new English schedule: 0800-0927 Far East on 15200; 0827-0957 Australia on 11805; 1459-1635 (Sunday 1701) India on 11650; 1615-1658 Africa on 17775 (Richard Lemke, Alta., CIDX *Messenger*)

IRAN New site for VOIRI provides better signals, English at 1130 on 9705 (Victor Goonetilleke, Sri Lanka, *RNMN*) Same for 11895 at 1930 (Bruce MacGibbon, OR)

IRAQ Per a local Iraqi party store owner, an unidentified service on 7207.3 varying to 7208.7 is from Iraq, heard from 0231 until 0340, including recitations at 0330, and martial music (Don Hosmer, Dearborn, MI, *Fine Tuning*)

ITALY (?) At 0257 on 13575 LSB, a station called Westwood One Network, and S.E.B., Southern European Broadcasting Service, with time checks in CET, fair to good (Ed LaCrosse, CA, *World of Radio*)

JAPAN Caving in to a listener who complained about "all those boring numbers", *Radio Japan DX Corner* failed to announce its own season frequency changes. RJ also failed to note that Cuba was already on 9505 in our mornings when Japan moved there from 11865, causing a major clash. *DX Corner* is now scheduled UTC Sundays at 0330, 0930, 1530, 2130, Mondays 0130; the first one is on the RCI relay, 5960.

KENYA KBS now uses 4935 only for General Service in English at 0300-2110. National Service in Swahili 0200-0630 on 6075, 0630-1330 on 7130, 1330-2110 on 6150. Central Service in local languages is on 4915 at 0300-1100 and 1400-1905; Eastern Service on 4885 at 0900-1905 but virtually inaudible in its target area (Greenway & Kenny, BDXC via *WDXC*)

KOREA NORTH New winter schedule for English to the Americas from Radio Pyongyang: 1100-1150 on 6576, 9977, 11335; 1300-1350 on 13650, 15230; 2300-2350 on 11770, 13650; 0000-0050 on 11335, 15115, 13760 (Craig Seager, *Radio Australia Japanese DX Time*)

KOREA SOUTH Radio Korea's relay via Canada at the



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Shortwave Broadcasting

winter timing of 1130-1159 is on 9650. Each language service appoints official monitors each year, based on their sincerity, accuracy, seriousness; and re-evaluates incumbents. Thanks to new staffer Gloria Dahl, from Texas, *Touring Korea* is now heard every Tuesday instead of alternately (RK SW Feedback)

MADAGASCAR Radio Madagascar: 0200-0500 on 3232 and 5005, 0500-0900 on 5050 (typo for 5005?) and 9690, 0900-1200 on 7155 and 9690, 1200-1500 on 6135 and 9690, 1500 to sign-off on 3232 and 5005. The separate French service seems dropped; French at 1400-1500, Malagasy at all other times (Greenway & Kenny, BDXC via WDXC) Strong on 5005, peaking around 1830, ex-5010, but irregular; parallel 3232 is weaker; alternates with 3288 (Craig Seager, Radio Australia Japanese DX Time)

MEXICO (non) XERK, the pirate on 7435, has been busted by the FCC in Donna, Texas; George P. Hopp, Jr., was fined \$1000 (FCC via David Alpert)

NEW ZEALAND ZLXA, 3935, has a ham DX program, *CQ Pacific*, Mondays at 0800; but the station planned to be off the air Dec. 29 to Jan. 21 whilst moving into new studios (Arthur Cushen, RNZI Mailbox)

RNZI may make another schedule change in December; has been on from 1800 to 1110 on the usual frequencies, 15485, 17675, 9855 and 9695 (RNZI Mailbox)

OMAN Radio Oman schedule in Arabic: 0200-0400 on 6085, 0200-0800 on 17770, 0400-1400 on 11730, 0400-2130 on 11890, 0800-1700 on 17735, 1400-1900 on 9735, 1900-2130 on 6085 (via Mickey Delimage, CIDX Messenger)

PAPUA NEW GUINEA The remaining 2 kW regional stations were scheduled for upgrading, one by one, to 10 kW during November and December; however, Radio Northern may be delayed by a land dispute, and some frequency changes are held up by international disputes (Gordon Darling, PNG via John Bryant, FT)

PERU New station announcing 4920 is Radio Superior de Juanjui, actually on 4921.9 at 0203-0434. Radio Pilcomoto, 5204.0 is in the town of Cauri, heard at 0120 to 0310 closing; Radio Oyon active again, testing new transmitter on 3800.2 at 2345-2407. Radio Cultural de Cailloma, testing 6851.6 at 2225-0100; on 5146.9 was a relay of a Tingo Maria FM station, Radio Q-96.4 FM Stereo, noted at 1140, 1240, 2313-0214, announcing schedule is 1100-0500; Radio Mundial, Casca, 4181.5 at 0038-0130; Radio Huancavelica still regular on new 4804.4 at 2300-2318; Radio Tradicion, 6601.4, very bad modulation and weak signal in Lima at 0000-0035; unID Peruvian or Bolivian on 3753.4, nonstop music at 0005-0035 (Pedro F. Arrunategui, via Dario Monferini)

RWANDA RRR has added daily 30-minute English broadcast at 1430, following an invasion from Uganda; listed on 3330, 6055 (*Sweden Calling DXers*) Overall schedule on these and many FM frequencies is 0255-0600, 0600-0900 Sunday, 0900-2100 in Kinyarwanda, Swahili and French (BBCM) See CANADA

SINGAPORE SBC on 11928 instead of 11940 around 1400, parallel 5052 and 5010; may be standby transmitter ex-15200 (Victor Goonetilleke, Sri Lanka, RNMN)

SRI LANKA Radio Japan relay at Ekala is under construction; antenna finished, transmitters being installed, may test in January (Goonetilleke, RNMN) Starts leasing the facility in January; plans to start a Persian service (SCDX)

SUDAN National Unity Radio, Khartoum, came back after a 16-month absence, 1400-1530 on 9535 in Arabic, Sudanese colloquial Arabic, and English. Shortwave usage by the "mainstream" Sudanese radio in Omdurman continues erratic; at various times in 1990 heard on 9435, 9535, 9540, 9550, 11632, 11635, 11710 (BBCM)

(non) Radio SPLA, 11710 at 1300, in English and Arabic, mentions these additional languages: Nuba, Nuer, Latuka, Dinka, Bari, Shilluk. Another opposition radio at 1800-1900 on 11710 and 9550 calls itself

The Voice of Sudan, the Voice of Democracy and Peace, the Radio of the Forces of the National Democratic Alliance; not "Radio Sudan" (BBCM)

SWEDEN After years of co-channel conflict with BBC on 17880 at 1530, Radio Sweden tested 17875 at 1630 in German toward western North America.

SWITZERLAND SRI has installed a new audio processing unit on one of the Schwarzenburg directional transmitters; if you can detect "outstanding modulation with tremendous volume" on one frequency compared to the rest, reports are wanted (The Two Bobs, SRI)

TAIWAN Voice of Free China, via WYFR, English to Europe at 2200-2300 on 9852.5 and new 11915 for the winter (RCI SWL Digest)

THAILAND The Dutch government has vetoed a proposed joint Radio Nederland/BBC relay station here (*Radio-Enlace*) But RN may not give up on it yet (RN Media Network) Radio Thailand in English on 9655 heard from 2300 past 2330, better than getting up at 1200 (Paul Routenburg, Ont., *Fine Tuning*)

UNITED ARAB EMIRATES Abu Dhabi back on 11 meters, 25690 at 1000 (Craig Seager, Radio Australia Japanese DX Time)

USA *World of Radio* has been added to the WWCR, Nashville schedule: Fridays at 2215 on 15690, UTC Mondays at 0130 on 7520. Please drop WWCR a note of thanks if this allows you to hear W.O.R. better than before: 4647 Old Hyde's Ferry Pike, Nashville, TN 37218.

After four months of transmitter problems, WRNO was back with a competitive signal, 15420 until 2400, then 7355.

KUSW is being sold to the Trinity Broadcasting Network, pending FCC approval; plans to broadcast their TV audio 24 hours (George McClinton, TN)

WWCR is carrying another former pirate, Radio Free New York, Saturday nights on 7520 (Jerry Berg, MA, FT)

To save time, Radio Miami International amended its application from 10 to 50 kW (Jeff White, RMI) Could be on in early 1991, at first 2200-0400 UTC, then 24 hours (*DX Partyline*)

VOA ran music tests on 8029, plus spur on 8000 and 8058 at 0259-0300, opening and/or closing with ID, but from where? Testing new high-power transmitter? (Ernie Behr, Ont.)

WSCC Worldwide, World Service Radio (or was it WFCC?) a pirate on 25890 occasionally faded up to audibility between 1859 and closing at 2002, relaying Norfolk VA FM station WCMS; back the next day at 1617-2000 but unheard since (gh) Earlier heard same on 26294 at 1737-2032 (Ed LaCrosse, CA)

USSR Radio Murmansk, northernmost shortwave station in the world, can be heard when Prague is pausing on 5930; at 0514 it breaks away from network for local interval signal and ID; Soviets accent Murmansk on second syllable, locals on the first (Rich McVicar, HCJB DXPL)

VIETNAM Bac Thai on 6616.9; Hoang Lien Son on 6602 and 5587; Cao Bang on 6581.2, all noted between 1200 and 1300 (Victor Goonetilleke, Sri Lanka, RNMN)

YUGOSLAVIA Radio Yugoslavia changed to a new signature tune, from a folk song called "Yugoslavia", audible before 1300 on 21715. Radio Ham Corner appeared on the first and third Fridays in the middle or closing the broadcast until 1330 (*World of Radio*)

ZANZIBAR Radio Tanzania Zanzibar, 11734.4, ended Dar-Es-Salaam news relay at 1710, then conversations and some great local instrumental music shortly before 1800 (Hans Johnson, Maryland)

Much more shortwave broadcast info appears in Glenn Hauser's own publications *DX LISTENING DIGEST* and *REVIEW OF INTERNATIONAL BROADCASTING*. Samples costs \$2 each, 10-issue subscriptions \$21 each or both for \$40, in North America; elsewhere, samples US\$3 or 7 IRCs, from Glenn Hauser, Box 1684-MT, Enid, OK 73702, USA.

Broadcast Loggings

Thanks to our contributors -- Have you sent in YOUR logs?
 Send to Gayle Van Horn, c/o Monitoring Times.
 English broadcast unless otherwise noted.

0100 UTC on 9615

NORWAY: Radio Norway. "This Week" program featuring a discussion warning young vacationing Norwegian girls to be aware of "white slavery" traders. (Bob Fraser, Cohasset, MA)

0103 UTC on 7345

CZECHOSLOVAKIA: Radio Prague. International news, commentary, and economic reports. Strong signal with slight fading. (Robert Landau, Secaucus, NJ) (Frank Hilton, Charleston, SC)

0110 UTC on 11800

ITALY: RAI. News report on Italian Red Cross plane sent to Jordan to assist refugees. (Fraser, MA)

0130 UTC on 9520

HUNGARY: Radio Budapest. DX program. Monitoring continued at 0235 UTC on 11910 kHz. Spanish service commencing at 0245 UTC. (John Carson, Norman, OK) (John Miller, Thomasville, GA)

0130 UTC on 4799.8

GUATEMALA: Radio Buenas Nuevas. Spanish. Religious programming to station ID. Improved signal quality at 0200 UTC recheck. (Miller, GA)

0140 UTC on 4840

VENEZUELA: Radio Valera. Spanish. Station ID, and local time check to Latin pops. Recheck next morning at 1000 UTC with similar programming in progress. (James Hetherington, Charlotte, NC)

0153 UTC on 13745

UNITED KINGDOM: British Forces Broadcasting Service. Interval signal to 0200 UTC. Dedications to the Persian Gulf troops and rock music tunes. Noted parallel frequency 7125 kHz and under BBC on 9590 kHz. (Mike Hardesty, Camp Lejeune, NC) (Preston Sewell, Franklin, NJ)

0225 UTC on 9475

EGYPT: Radio Cairo. Newscast at 0228 UTC and discussion on the Egyptian/American relations. Mailbag show at 0243 UTC. Parallel frequency 9675 kHz audible. (Carson, OK)

0235 UTC on 11825

ALBANIA: Radio Tirana. News and commentary suffering interferences to sign-off at 0255 UTC. Sign-on routine on 7300 kHz at 0258 UTC. Sign-on ID to news suffering co-channel interferences from WHRI on 9595 kHz, and WYFR on 9505 kHz. (Carson, OK)

0240 UTC on 5025

CUBA: Radio Rebelde. Spanish. Correspondents phone-in reports from Argentina, followed by play-by-play sports commentary. (Carson, OK) Audible at 1005 UTC on 5025 kHz. (David Thompson, Houston, TX)

0245 UTC on 6280

LEBANON: King of Hope. Arabic. Religious vocals to "This is the King of Hope" ID. Announcer talk and scripture readings. (Donald Westbrook, Columbus, OH)

0300 UTC on 15325

FRENCH GUIANA: Radio Japan (relay). International news on insurgents in Rwanda. Magazine show featuring Japanese rock 'n' roll music. Depending on your age, it was either heavy metal or noise. Spanish programming commencing at 0330 UTC. (David Browning, Portland, OR)

0334 UTC on 9690

CHINA: Radio Beijing. "The Business Show," followed by "In the Third World." (Carson, OK) Excellent signal quality on 15100 kHz at 0405 UTC. (Harold Bower, Sunbury, PA) (Richard Langer, Pittsburgh, PA)

0349 UTC on 15180

USSR: (Armenia SSR) Radio Yerevan. Acappella selections and violin solos. Poor signal quality during commentary on Armenians starving in the USSR. Station ID/frequency schedule and sign-off. (Browning, OR)

0355 UTC on 4800

LESOTHO: Lesotho National Broadcasting Service. Sesotho. Religious hymnals and sermon with fair signal quality, and minimal fading. (Richard Langer, Pittsburgh, PA)

0400 UTC on 9885

SWITZERLAND: Swiss Radio International. International news and "Dateline" program. Stories focused on Philippines insurgency, genetic "fingerprinting" and medical research developments. (Browning, OR) Monitored on 1195 kHz at 1834 UTC. (Landau, NJ) On 12035 kHz at 0320. (Carson, OK)

0409 UTC on 15325

SEYCHELLES: FEBA (tentative) Arabic. Religious programming and spiritual music. Fair signal for xylophone interval signal at 0445 UTC and sign-off. (Landau, NJ)

0419 UTC on 7270

SOUTH AFRICA: Radio RSA. Music program of pops and reggae tunes. (Landau, NJ) Audible on 15365 kHz at 1356 UTC and 11900 kHz at 0335 UTC. (Carson, OK)

0515 UTC on 7398

UNITED STATES: Midnight Radio (pirate). Pop rock music show, IDs, phone numbers and request for reception information. DJ also claimed to be running 20 to 40 watts on shortwave, while simultaneously operating on FM. Heavy Interference and fading. (Jerry Witham, Keaau, HI)

0525 UTC on 5047

TOGO: Radiodiffusion-Television Togolaise. French. Distinctive chime interval

signal at tune-in. Opening anthem and ID at 0529 UTC, followed by international news and African highlife style music. (Hilton, SC) (Sam Wright, Biloxi, MS)

0612 UTC on 3316

SIERRA LEONE: Sierra Leone Broadcasting Service. English news in progress at tune-in, to closing headlines and ID. Anthem closedown barely audible at 2330 UTC, during afternoon African checks.-ed.

0945 UTC on 5020

SOLOMON ISLANDS: Solomon Islands Broadcasting Corporation. Local Honiara commercials to station ID and Island vocals. (Earl Bailey, Oakland, CA)

1015 UTC on 9580

AUSTRALIA: Radio Australia. Stock market reports. (Fraser, MA) Monitored on 17630 kHz at 1735 UTC, to include program "Pacific Women," with ID, interval signal and program closedown at 1758 UTC. (Browning, OR)

1110 UTC on 3305

PAPUA NEW GUINEA: Radio Western. Pidgin. Male/female local news with chat and laughter. American pops and country music from Randy Travis. (Hilton, SC)

1117 UTC on 11835

SRI LANKA: Sri Lanka Broadcasting Corporation, "Hour of Decision" religious program, and instrumental music. Time pips, station ID and national anthem to 1133 UTC. (Landau, NJ)

1140 UTC on 4000.2

INDONESIA: Celebes - Radio Republik Indonesia Kendari. Indonesian. Easy-listening music to "Song of the Coconut Islands" tune. Time pips, station ID and Jakarta news relay. (Westbrook, OH)

1248 UTC on 21635

FRANCE: Radio France International. News on a French torture museum, followed by French programming at 1257 UTC. (Carson, OK) Monitored on 17620 kHz at 1616 UTC, with editorial on Iran's political scene. (Fraser, MA)

1530 UTC on 17880

SWEDEN: Radio Sweden, Scandinavian news, interview, and discussion on two BBC TV specials filmed in Sweden. (Browning, OR) (Bailey, CA)

1620 UTC on 17800

UNITED STATES: Voice of America. "Nightline Africa" show featuring correspondent's reports from Rwanda and Liberia. Political reports from Islamabad, and International news. (Browning, OR) State Department news on 5995 kHz at 0202 UTC. (Carson, OK) (Thompson, TX)

1705 UTC on 9588

NORTH KOREA: Radio Pyongyang. Lady's ho-hum commentary on North Korea to ID at 1712, and absolutely fascinating description of a North Korean factory. (Witham, HI) Wow, Sorry I missed that one, Jerry.-ed.

1715 UTC on 5985

TANZANIA: Radio Tanzania. Discussion on the on-going Persian Gulf crisis, ID, and program of Tanzanian music at 1730 UTC. Strong signal quality. (Witham, HI)

1720 UTC on 6020

NETHERLANDS: Radio Netherlands. Program on the art of bell making in the 1990s, closing at 1724 UTC with ID. (Witham, HI)

2000 UTC on 13660

IRAQ: Radio Baghdad. Fair signal quality for ID/frequency schedule, and Arabic music. (Kelly Bailey, Midland, AR) Audible past 2245 UTC with "Mailbag" program. (Fraser, MA) Arabic news at 1922, ID, and news about US forces in Saudi Arabia. (Carson, OK)

2032 UTC on 15095

SYRIA: Radio Damascus. Male announcer includes Damascus IDs, program features and 70s music show. (Jack Davis, Birmingham, AL)

2109 UTC on 9560

JORDAN: Radio Jordan. Arabic. Middle Eastern music to announcer chat and station ID. Intros to program features and easy-listening music. Radio drama to Arabic music program. Full ID/frequency schedule at 2200 UTC to International news. (Wright, MS)

2200 UTC on 15275

SAIPAN: KHBI. Christian Science Monitor. Good strong signal on this frequency. Programming of International news, features and a variety of music selections. (Sewell, NJ) Audible at 0850 UTC on 9530 kHz and 1500 UTC on 13625 kHz. (Wright, MS)

2205 UTC on 11920

COTE D'IVOIRE: Radio diffusion Televison Ivoirienne. French. Announcer conducting interview at tune-in, followed by a radio drama. Easy-listening music to local news items. Intermittent interferences to final fade-out at 2240 UTC. (Brian Bagwell, St. Louis, MO)

2220 UTC on 9580

GABON: Africa No. 1. French. African and reggae vocals to "Ici Afrique" ID. American rap tunes and French pop vocals. "Bonsier" to listeners to introduce news headlines. Tune out at 2305 UTC. (Hilton, SC) (Bruce Graham, San Antonio, TX)

2250 UTC on 6010

BRAZIL: Radio Inconfidencia. Portuguese. Brazilian pops and easy-listening tunes to 2300 UTC. Station ID and news bits. Audible at recheck on 6010 kHz at 0040-0055 tune-out. (Wright, MS)

2310 UTC on 9445

TURKEY: Voice of Turkey. "From Turkey" program focuses on the downfall of trade with Iraq since the Middle East crisis began. (Fraser, MA)

2320 UTC on 4825

BRAZIL: Radio Cancoa Nova. Portuguese. Brazilian ballads and instrumentals. Station ID/frequency schedule at 2330 UTC, with station address. (Dennis Green, Atlanta, GA)

Utility World

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

A lot of questions come in the mail each month asking me where I listen, what bands do I monitor? My answer is real simple, "It really depends on what kind of mood I am in first of all."

Sometimes I just spin the dials, searching for new stations to add to my HF database. Other times I might work a specific set frequencies trying to figure out a particular military or government radio system.

When I want to really get down to some hard core distant radio listening (DX), I usually set my sights on the 8 MHz Marine radio band. It is one of my favorite areas to explore.

I consider myself a hard core marine/ship buff when it comes to DX. I like to hear the comms from ships and if I have enough information, I will try collecting a QSL (or verification letter or card) from the ships or coastal stations I hear. Yes, Matilda, you can verify ships and coastal stations, with patience.

The 8 MHz band is active almost 24 hours a day and is a great place to get your feet wet in marine band monitoring. There is a lot to hear and monitoring in the 8 MHz marine spectrum that stretches from 8195.0 - 8815.0 MHz. Table One examines the basic band plan of this popular marine band.

One of the first things that needs to be explained is the concept of simplex and duplex. Simplex operation means that both sender and receiving station are usually on one frequency. Once one station ceases transmission, the other then can key up their transmitter and talk. You cannot hear anything in your receiver while you are talking to the other station.

Duplex operation is a little different. Duplex uses two frequencies; we will call them channel A and B. Station 1 can transmit on channel A while receiving on channel B. During this time Station 2 will be receiving on channel A and transmitting on channel B. Thus, duplex operation can simulate what you do on the telephone everyday. Both sides can talk and hear at the same time. This is used very extensively by ships and coast station in the radiotelephone duplex channels and also in the radioteletype duplex channels.

Now let's break down some of this spectrum and see what you will hear. First off, I have indicated the digital selective calling frequencies in Table one. So far I have heard nothing on these channels, but I assume that the mode that you would hear here will be SITOR-A.

SITOR-A is a form of radioteletype and requires special decoder equipment to read the traffic being sent. Another mode I mentioned in Table One, FAX (facsimile), also requires special decoder equipment. These modes are called digital modes. The frequencies ranges in Table One marked with an ***, indicate frequencies ranges that require special decoders such as the Universal M-7000 or the AEA PK-232 to decode the traffic being sent.

Most of the SITOR-A being sent consists of messages to and from ships at sea. SITOR-A is normally used in two-way communications. Slowly but surely Morse code is being replaced in the marine bands by this means of communications. You will find in addition to SITOR-A another mode called SITOR-B that is used for general broadcast to ships by coastal stations. These general broadcasts could be marine warnings, weather information and even some press services.

8 MHz Marine Basic Band Plan Table One

8195.0	-	8288.0	Radiotelephone duplex/ship side only (USB)
8291.0			Worldwide distress and Safety frequency/simplex channel (USB)
8291.1			Coast and ship stations simplex freq (USB)
8294.2			Coast and ship stations simplex freq (USB)
8297.6	-	8299.6	* Ship radioteletype (normally SITOR-A) simplex
8300.0	-	8328.0	* Ship wideband data, fax and special modes
8328.0	-	8331.5	* Ship oceanographic data transmissions simplex
8331.5	-	8344.0	* Ship wideband data, fax and special modes
8344.0	-	8357.0	* Ship radioteletype (SITOR-A) duplex
8357.5			* Ship radioteletype (SITOR-A) simplex
8358.5	-	8360.0	** Ship Morse code working channels
8360.0	-	8374.0	** Ship Morse code calling channels
8375.5			* Ship stations digital selective calling freq
8376.5			* Ship radioteletype distress and safety freq
8377.0	-	8436.0	** Ship Morse code working frequencies
8436.0	-	8705.0	** Coastal stations, mode can be: radioteletype, wideband and narrowband, fax, special modes, or the dominant mode here Morse code.
8705.0	-	8718.0	* Coast stations radioteletype (SITOR-A) paired with ship frequency 8344.0 - 8357.0
8718.5			* Coast stations digital selective calling freq
8718.9	-	8811.9	Radiotelephone duplex/coastal side only (USB) paired with 8195.0 - 8288.0 ships

Normally when tuning across the area where SITOR-A is broadcast (8705.0 - 8718.5), you will hear a station sending their call letters in Morse code followed by a SITOR idle tone. This is used to mark the channel for the ships and let them know a particular station is on the air and available to be worked.

If a ship wants to communicate with a particular station they hear, they will then transmit on the corresponding channel in the ship segment (8344.0 - 8357.0), and establish a duplex channel of communications. Table two gives the full 27 channels used by ship/coast stations in the 8 MHz range.

FAX broadcasts in the marine bands primarily consist of weather charts and satellite pictures. You will easily recognize fax signals once you have heard the characteristic raspy tones representing shades between black and white of the picture the station is sending. Check the following frequencies and use them to help recognize fax signals: 3357.0 8080.0 10865.0 16410.0 20015.0 NAM-US Navy Norfolk, VA.

For years, Morse code was the predominant mode on the marine bands and, to a certain extent, still is right now. I have marked the areas you can expect to hear Morse code or CW on Table One with a ***. Tuning in the area reserved for coastal stations you will hear a variety of sounds from all kinds of modes but CW will be the one you hear most often.

8 MHz Narrow Band Telegraphy Paired Channels - Table Two

Coast	Ship	Channel	Coast	Ship	Channel
8705.0	8344.0	1	8712.0	8351.0	15
8705.5	8344.5	2	8712.5	8351.5	16
8706.0	8345.0	3	8713.0	8352.0	17
8706.5	8345.5	4	8713.5	8352.5	18
8707.0	8346.0	5	8714.0	8353.0	19
8707.5	8346.5	6	8714.5	8353.5	20
8708.0	8347.0	7	8715.0	8354.0	21
8708.5	8347.5	8	8715.5	8354.5	22
8709.0	8348.0	9	8716.0	8355.0	23
8709.5	8348.5	10	8716.5	8355.5	24
8710.0	8349.0	11	8717.0	8356.0	25
8710.5	8349.5	12	8717.5	8356.5	26
8711.0	8350.0	13	8718.0	8357.0	27
8711.5	8350.5	14			

8 MHz Radiotelephone Paired Channels Table Three

Coast	Ship	Channel	Coast	Ship	Channel
8718.9	8195.0	801	8768.5	8244.6	817
*8722.0	8198.1	802	8771.6	8247.7	818
*8725.1	8201.2	803	8774.7	8250.8	819
*8728.2	8204.3	804	8777.8	8253.9	820
*8731.3	8207.4	805	8780.9	8257.0	821
8734.4	8210.5	806	*8784.0	8260.1	822
8737.5	8213.6	807	8787.1	8263.2	823
*8740.6	8216.7	808	*8790.2	8266.3	824
8743.7	8219.8	809	*8793.3	8269.4	825
*8746.8	8222.9	810	*8796.4	8272.5	826
*8749.9	8226.0	811	8799.5	8275.6	827
8753.0	8229.1	812	8802.6	8278.7	828
8756.1	8232.2	813	*8805.7	8281.8	829
*8759.2	8235.3	814	*8808.8	8284.9	830
*8762.3	8238.4	815	*8811.9	8288.0	831
8765.4	8241.5	816			

Most CW communications again start with the coast station. These stations send out a variety of markers. A marker might consist of something as simple as "DE FUF" or as complicated as "CQ CQ CQ DE WLO WLO WLO QSX 4/5/6/8 K." You will find a lot of abbreviations and "Q codes" broadcast via these Morse code stations. A good list of these can be found in the latest *Grove Shortwave Directory*.

If you are not willing to learn the code, the best way to log these marine stations is to tape the audio off your receiver and then play it back. Use a chart of the Morse code in front of you to decode the message or marker being sent from the station. If you miss a letter, no sweat, just keep rewinding the tape until you have deciphered the whole marker. You can also use some of the special decoders I mentioned earlier, but keep in mind that a decoder can only decode what it hears; if the operator sending the code sends bad code, the result on your screen will reflect that.

Normally the coast station will send its marker continuously until a ship tries to contact them. Once a ship identifies that a certain station is on the air, he will transmit to the station on a selected calling channel. There are 18 of these from 8360.4 - 8374.0. This is where initial contact is established. Once they have made that initial contact, the ship will move off to a working channel that they have agreed to. These working channels are where messages are passed and there are two ranges in the 8 MHz band: 8358.5 - 8360.0 and 8377.0 - 8436.0.

The final area to explore in the 8 MHz band is voice channels associated with the radiotelephone duplex channels. Now this area is, for most of you, your first exposure to monitoring the marine bands. All of these transmissions will be in upper side band (USB). Again, these are duplex channels which simulate a telephone call. In fact, that is the purpose of these channels -- to carry telephone calls to and from ships at sea.

Yes, you can hear Aunt Mabel on a cruise, talking to the family back in Boise about the charming man she met while on the Queen Mary II. You might hear ship captains talking to their home offices about ship problems, new orders, or destinations. The conversations here are almost endless and intriguing.

The best way to hear these conversations is to park on the coast side from 8718.9 - 8811.9. Occasionally the ship side of the conversation will bleed through on the coastal channel. The best way to hear both sides is through the use of two receivers, one on the coast channel and one on the ship channel. Receivers configured with two VFO's such as the Kenwood R-

5000 can be programmed with the frequencies in each VFO and switched as the conversation switches between ship and shore.

Table Three gives a complete breakdown of 8 MHz Radiotelephone channels. Frequencies marked with an asterisk indicate channels used by one of the four major US stations that handle ship to shore comms. These will be the easiest to hear for the newcomer.

I hope this brief look at an interesting segment of the HF spectrum has been useful. Eight megahertz can be a lot of fun to listen to. Why not fire up the receiver right now and check it out?

Questions, Questions, we get questions.

A ute world regular, Preston, recently sent along a few questions with his loggings. The questions are of general interest, so I thought I'd share them with you.

Preston: Will Halifax military QSL?

Monitoring Times: For the most part none of the CANFORCE military stations QSL. There might be a few out there, but the policy they have established is no QSL's.

Preston: What are the port address for NOAA ships?

Monitoring Times: There are several addresses and it depends where the ship is home ported. A good list of ships and addresses can be found in the *Utility QSL Address Guide*, Vol 1 by Symington & Henault, available from DX Radio Supply (P.O. Box 360, Wagontown, PA 19376).

Preston: What is a good reference source to identify commercial shipping, including data on the vessel and the address for the company?

Monitoring Times: That's a very common question, Preston. The best single source is the Lloyd's of London ship registry books. They are very expensive. I have been told that some libraries carry these books, or you might also want to check on an interlibrary loan. A small list of companies and addresses is in the address book I noted above. The ITU list, which is what I have, gives a lot of information about the ships but no addresses.

Finally, here is a quick reference chart that Preston has developed to ID Coast Guard aircraft he hears on shortwave radio. Nice job, Preston, and we appreciate you sending it in to Ute World.

U.S. COAST GUARD AIRCRAFT:

TAIL #	TYPE	NAME
01 (SWORDFISH ALSO)	VC-4A	GULFSTREAM I
02	VC-11A	GULFSTREAM II
1359-1398	HH-52A	SEA GUARD
1400-1428	HH-52A	SEA GUARD
1430-1438	HH-3F	PELICAN
1439-1466	HH-52A	SEA GUARD
1467-1497	HH-3F	PELICAN
1500-1504	HC-130H	HERCULES
1601-1603	HC-130H	HERCULES
1700-1790	HC-130H	HERCULES
2101-2141	HU-25A	GUARDIAN
2578;2789;2791	CH-3E	
3501-3502	E-2C	HAWKEYE
6501-6577	HH-65A	DOLPHIN
9691	CH-3E	

Thanks to all who contributed to this month's column. From Gayle, Loyd and I, we hope you had a great holiday season and welcome to the new year.....1991. Now let's see what you are hearing in the Utility World this month...

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISSB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Faxsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

- 517.0 Unid station passing marine weather for Shanghai, Taiwan, Cheju-do, Naha and other major ports in Asia. At 0405 in FEC/N. (Bill, Okinawa)
- 2670.0 US Coast Guard Hampton Roads, VA with notices for Virginia shoreline including security zone around the USS Forrestal when moving in USB at 0205. (Bill Burghardt, Denville, NJ)
- 3290.0 "P" single letter CW beacon heard at 0416 with continuous ID. Occasional weak CW traffic noted co-frequency and ID noted on that traffic either. (Mike Hardester, NC) *Welcome home, Mike, hope your knees get a little better.--The Chief.*
- 3293.0 Spanish female five-digit number station at 0510. (Skip Harwood, Beale AFB, CA)
- 4470.0 Raymond Zero AAY working Raymond Zero AAC talking about radios in USB at 0215. Also heard Raymond Zero ADR. Is this Air Force? (Russ Hill, MI) *I am not sure. -- The Chief.*
- 4640.0 English female three/two-digit number station at 0038. (Burghardt, NY)
- 4882.0 Czech female three/two-digit number station at 1947. (Mr. Glasgow, Scotland)
- 5680.0 Unid Canadian base station working MYKG (hunting plane) requesting weather for Valdor and others at 1249 in USB. Isn't this an international SAR frequency? (Battles, NH) *Yes sir.*
- 5692.0 US Coast Guard Rescue 791 working Traverse City, Michigan Air Station with traffic in USB at 0305. (Hill, MI)
- 5718.0 Rescue 308 working Trenton military with patch to RCC about losing an ELT signal over downtown Montreal. At 2217 in USB. (Fernandez, MA)
Halifax military dispatching several rescue aircraft to SAR of downed airliner after pilot radioed he was ditching into the water from 10,000 feet (Faucet Airlines Boeing 727) enroute from Malta to Miami, 1934 was first call heard. (Battles, NH)
- 5902.0 Spanish female five-digit number station at 0410. (Harwood, CA)
- 5904.0 GYU-Royal Navy Gibraltar at 0020 with RYs and foxes. RTTY 850/75R. (Ricks, PA)
- 6200.0 German female five-digit number station at 2315/2345. Also heard USS Abraham Lincoln (CVN-72) calling CG COMSTA New Orleans and Chesapeake -- no joy in USB. (*No time given. -The Chief.*) (Sewell, NJ)
NRUF-USCGC Mohawk working NMN, duplex 6506.4. Mentioned its status as decommissioned in USB at 2353. (Perdue, AL)
- 6218.0 The tug Navigator with position report, weather and sea conditions in comms with WCJ322 at 1120. (McCarthy, NY)
- 6235.0 German female five-digit number station at 2209. (Mr. Glasgow)
- 6240.0 English female (strong Spanish accent) with three/two-digit number station at 0415. (Harwood, CA)
- 6474.0 NRUF-USCGC Mohawk (WMEC-913) with position report to NMN-Portsmouth, Virginia at 0204. Mohawk underway enroute to USCG shipyard Curtis Bay, Maryland, after port call at Wilmington, Delaware. Will be commissioned in February 1991. RTTY 170/75R. (Ricks, PA)
- 6694.0 Golf 4 Alpha with EAM broadcast at 1653 in USB. (USN maybe?) (Battles, NH) *Yes, Bill, probably. --The Chief.*
- 6731.0 Female using unid language sending five-digit numbers at 0323. (Hill, MI)
- 6736.0 Unid (weak signal) sounded like rap music then into comms. Heard one station mention weather. Fishing boats? (Hill, MI) *Who knows, Russ, could be. --The Chief.*
- 6785.0 Spanish female three/two-digit number station at 0009. Also heard WK4469 working WK4402 chit-chatting at 0250. (Hill, MI)
- 6812.0 Air Force One (2800) working Andrews, Crown and Reckless "Checking out these new radios" in USB at 1450. (Frantz, GA)
- 6825.0 Spanish female five-digit number station at 0520. (Harwood, CA)
- 6830.0 SAM 60202 working Andrews at 1236 in USB. (Battles, NH)
- 6855.0 German female five-digit number station (Xray Lima) at 1901. (Mr. Glasgow)
- 6930.0 Unid English speaking female chit-chatting in USB at 0230. Appeared to be a phone conversation, one signal strong, the other was weak. (Hill, MI)
- 7391.4 Navy MARS station NNNOCPC-USS Bronstein and NNNOCOC-USS Sacramento with phone patches stateside at 0630 in USB. (Harwood, CA)
- 7423.0 Spanish female four-digit number station at 0310. Heard almost nightly in this time frame. (Harwood, CA)
- 7530.0 NMF-USCG COMSTA Boston, Massachusetts, with NOAA Oceanographics Analysis chart of the Gulf Stream boundaries at 1800. Very important daily chart for fishing interests. Fleets of trawlers head for warm water eddies (WEs) Inshore of the Gulf Stream as these are the most productive fishing grounds. 576/120 FAX. (Ricks, PA)
- 8161.0 Royal Australian Navy ships active here around 0700 in USB. (Tim Braun, Reston, VA via Bill Battles) *Thanks Tim and Bill--the Chief*
- 8291.0 WTE6177-Limitless in USB working WAH9478-Eastwind at 1358. (Patrick O'Connor, NH)
- 8298.0 UZGH-NISP Passat, Soviet Hydromet weather ship at ocean station Charlie, west of Ireland, with weather observations for RUMS via RNO-Moscow at 2041. Home port is Odessa. SITOR-B mode. (Ricks, PA)
- 8418.0 UZYV-Kosmonaut Viktor Patsayev, Soviet spaceflight tracking ship enroute to South Atlantic with ship to ship comms to UISZ-Akademik Sergei Korolev. CW mode at 0305. (Ricks, PA)
- 8437.0 Unid unclassified coast guard telexes (Hawaii mentioned often) at 0420. RTTY 147/75R. (Hal Bilodeau, IL)
- 8487.1 XSG26-Shanghai Radio with CQ CW marker at 0657. (Bill, Okinawa)
- 8490.0 NMN-USCG COMSTA Portsmouth, Virginia, calling CQ followed by tropical weather at 0202 using SITOR-B. (Ricks, PA)
- 8765.4 CG Cutter Vigilant (WMEC-617) called COMSTA Boston. Figured out on wrong channel switched to 8241.5 and made contact in USB. (Sewell, NJ)
- 8808.8 PPN-Natal Marine Coastal station in USB at 0835 with traffic. (McCarthy, NY)
- 8980.0 Coast Guard AC6588 working Cape Air in USB at 0233. Haven't seen this freq before. (Frantz, GA)
- 8993.0 SAM 200 calling MacDill for a phone patch to a Washington DC number. Announced expected arrival at Andrews AFB and asked about the location of Air Force 2. Working patch to CROWN in USB at 0040. (Richard Baines, Glenview, NH)
Rook 77 (EC-135) calling MacDill at 1307. Army 270 answered when Rook 77 couldn't get MacDill. (Battles, NH)
- 9043.0 DOD, Cape Radio, King 1 and 2, Sea Lord, Hawkeye, Cutter Thelis in USB at 1300 conducting a space shuttle disaster training exercise. Other freq mentioned: 138.45, 239.0, 257.5, 267.5 and 284.5. (Frantz, GA) *Florida folks take note. --The Chief*
- 9284.9 TNL-Brazzaville, Congo, with coded meteo and AFTN messages at 0339. RTTY 389/50N. (Bilodeau, IL)
- 9325.0 German female five-digit number station at 0119. (Fernandez, MA)
- 9334.3 AFRTS Feeder heard in LSB with news programming and music between items. (Fernandez, MA)
- 9470.0 German female three/two-digit number station at 1829. (Mr. Glasgow)
- 9725.0 Female voice passing numbers in Chinese -- another Chinese number station. Heard at 0508 in AM. (Bill, Okinawa)
- 10177.0 German female three/two-digit number station at 2345. Spy vs spy apparently unaffected by German-reunification. (Ricks, PA) *Notice that, huh. --The Chief.*
- 10205.5 TOA working M3G with radio checks in LSB at 1325, then went to "25." (Frantz, GA)
- 10275.0 German female three/two-digit number station at 1912. (Mr. Glasgow)
- 10374.0 German female three/two-digit number station at 0313. (Bilodeau, IL)
- 10400.0 German female three/two-digit number station at 2106. (Mr. Glasgow)
- 10665.0 Spanish female four-digit number station at 0108. (Fernandez, MA)
- 10678.3 AP press photos at 0000 to 0115. No station ID. FAX/60LPM (Ricks, PA) *Sam, I show AP from New York on 10687.5--the Chief.*
- 10890.0 Russian male five-digit number station at 2122. (Mr. Glasgow)
- 11056.0 Andrews AFB, Maryland, working aircraft 206 in USB at 2130. (David, ON)
- 11080.0 MAC28, MAC24, Port, Junkyard, Gate 6, O3L, MAC40. Ten vehicle convoy; convoy 1, 2 and 3 at 1310 in USB. (Frantz, GA)

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- 11118.0 AFA-Andrews AFB, Maryland, working Locust 44 for radio checks in USB at 0300. (Frantz, GA)
- 11165.0 Fishing fleets, lots of XXX language. One station gave location as Venezuela in LSB at 0215. (Frantz, GA)
- 11176.0 USAF GCCS Station Ascension Island working several MAC aircraft, all probably enroute to Middle East at various times. (Jeff Mullowney, TX)
- Croughton GCCS working US Army vessel "Bunker" and asking for a phone patch to AAC2 in Virginia about subsistence money. Told not to spend any of the \$100,000 on board for five days. Said all fees through the Suez canal to go via US Embassy. Ship was 80 miles NW of Port Said. Ship reporting on a daily basis through Croughton or Incirlik. Unusual to go via a USAF channel? (Mr. B.B., UK) *Thanks for the kind words. Unusual, yes and no. Nothing military surprises me and I have heard US Navy ships on GCCS.--The Chief*
- 11237.5 German female three/two-digit number station at 2105. (Fernandez, MA)
- 11241.0 Brewmaster talking to Red Dog about upcoming conference and antenna alignment. Brewmaster also called Trenton Military in USB at 1840. (Harwood, CA)
- 11602.0 6MK50-Yonhap News Service-Seoul, South Korea. News item concerning North Korea's massive national debt. Monitored at 0802 using RTTY 50 baud/normal. (Bill, Okinawa)
- 12205.0 Russian male five-digit number station at 2029. (Mr. Glasgow)
- 12260.0 Russian male five-digit number station at 1840. (Mr. Glasgow)
- 12429.2 WPJ working the tug Gauntlet & Pioneer-WYP6150 with status reports in USB. (McCarthy, NY)
- 12526.5 RMCK-Nikolai Zubov, Soviet Naval oceanographic research vessel enroute to Havana with traffic for UYJ-Kaliningrad Radio at 0324. Vessel tests radar, sonar and other navigational and mapping gear. RTTY 170/50. (Ricks, PA)
- 12760.0 Russian male five-digit number station at 2214. (Mr. Glasgow)
- 12838.8 Using RTTY noted "PVC34/PBC36/PBC38/PBC312 (then RY de PBC3K" at 1530. Anybody know who this is? (David, ON) *This is the Dutch Navy and the PBC3K is probably a Dutch naval ship. --The Chief*
- 12845.0 Russian male five-digit number station at 2046. (Mr. Glasgow)
- 13208.0 Unid (possibly QHJ) with several news items from Cambodia, in manual Morse Code. Not many like that still around (*That's true, Bill. --The Chief*) Heard at 0818 in CW. (Bill, Okinawa)
- 13247.0 Keg Nail working WAR-46 and request QSY to W-114 at 0004. (Battles, NH)
- 13300.0 United flight 847 passing enroute weather report to Tokyo center at 0255 in USB. (Bill, Okinawa)
- 13330.0 Boyeros, Cuba LDOC working Oscar-Oscar 1945 with traffic in USB at 2034. (Bill, MI)
- 13342.0 LDOC Stockholm, Sweden, working a/c 190 and medical emergency in USB. Believe flight was Air France as Stockholm patched company office through to request return to Gander at 0245. (Fernandez, MA)
- 13464.0 SATCOM 01 working Beauty with phone patch traffic at 2300 in USB. Miscellaneous references to diplomatic type traffic and secretary of state's name mentioned. (Dan, Sacramento, CA)
- 13994.0 US Army MARS -- Saudi operations AEM call sign series on this and other frequencies including 14405, 17490.5, 17501.5 and 20995. (Williams, SC)
- 14440.0 Unid French station heard at 0230. Sounded like a phone patch. (Bill, MI)
- 14463.0 NNNOCVG-USS Dwight D. Eisenhower (CVN-69) (*I know exactly where that station is located on the ship --The Chief*) working NNNOKCP with phone patch traffic at 2112 in USB. (Perdue, AL)
- 14465.5 NNNOERM working NNN0MEG and NNN0MQU. Shore station mentioned to afloat unit that he could only work ashore units and only in RTTY. Noted in USB at 2045. (Perdue, AL) *I don't have who NNNOCYY and CYZ are, Neal. Anybody out there know which ships they are. --The Chief*
- 14467.0 NNNOCAI-USS Antietam (CG-54) working NNN0NHA with priority phone patch traffic in USB at 2345. (Perdue, AL)
- 14477.0 NNNOCOU-USS Saratoga (CV-60) working NNN0KRQ looking for a clear frequency in USB at 2120. Also NNN0CNP-USS Bainbridge (DDGN-25) working NNN0NAV with phone patch traffic in USB at 2255. (Perdue, AL)
- 14609.0 JAM 34-Tokyo, Japan, with a frequency marker (RY, QBF) at 0900 using RTTY 50 baud/reverse sense. (Bill, Okinawa)
- 14620.0 CW station sending 666 repeated over and over at 2144, no other message heard. (Mr. Glasgow)
- 14902.0 Eagle Nest 626 mobile, Mountaineer 204 mobile and Sparrow 11 in USB at 1720. Texas and Florida CAP. (Frantz, GA)
- 14921.0 XNA-Xinhua news service, Beijing, China, with a series of news items at

- 0540 using 75 baud RTTY, normal sense. (Bill, Okinawa)
- 15015.0 USAF GCCS Station Ascension Island working MAC aircraft enroute Persian Gulf at various times. (Mullowney, TX)
- AFA-Andrews AFB, Maryland, working SAM 973/974 with phone patch to Current Operations about flight data in coded form. Heard in USB, then LSB at 2132. (Fernandez, MA)
- 15810.0 LOL-Buenos Aires Naval Radio, Argentina, with five-letter groups at 2345. RTTY 425/75. (Ricks, PA)
- 16041.0 German female three/two-digit number station at 2026. (Fernandez, MA)
- 16463.1 GLNE-Discovery, Oceanographic research ship in USB at 1902 with phone patch traffic through GKT62-Portishead Radio. HP5034-Oil Puma in USB at 1845 working GTK62 and MUTG-yacht Tehari in USB at 1911 with phone patch traffic through Portishead. (O'Connor, NH)
- HMS Birmingham (D-86) working Portishead Radio with phone patch traffic in USB. (David, ON)
- 17950.0 Eagle (East coast, USA) in comms with Night Hawk (Saudi Arabia) and both stations running phone patch traffic with females. Several mentions of heat/tents and guys getting sick upon arrival. Then these two stations moved to 13540 at 2320, 13411 at 0000 and somewhere else at 0005. All USB and operators said they had up to 12 frequencies to choose from. (Williams, SC)
- 18003.0 SAM 86972 working Andrews in USB at 1416 with phone patch traffic. (Battles, NH)
- 18034.5 JAL32-Kyodo news service, Tokyo, Japan, with a frequency marker tape (RY, QBF) heard with 50 baud RTTY, reverse sense at 0500. (Bill, Okinawa)
- 18181.5 Unid quick foxes test tape. Found encryption here later on. RTTY 846/75R at 0453. (Bilodeau, IL)
- 18294.5 VTHO/VTHX with a series of short numbered messages in Vietnamese. Heard at 1025 using TDM2:4/N. (Bill, Okinawa)
- 18410.0 Spanish female five-digit number station at 2012. (Fernandez, MA)
- 18480.0 English female three/two-digit number station at 2008. (Fernandez, MA)
- 18755.3 IPCQ (Interpol general call) with a series of Interpol warrants, advisories and other messages. Heard at 0750 using SITOR-B. (Bill, Okinawa)
- 20016.0 SAM 974 and Trout 99 in comms with Andrews AFB, Maryland, at 1700 in USB. (Williams, SC)

The Scanning Report

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Brasstown, NC 28902

Putting Your Skills to the Test

Your level of expertise in the scanning world cannot, and should not, be judged by the cost of your equipment. If you have an ICOM R-7000 in your shack, that doesn't make you an expert. On the other hand, using an old, crystal controlled radio shouldn't label you as an amateur.

Seniority is another poor indicator of excellence. If you have been scanning for twenty years, that doesn't make you a professional. I've talked to senior scanner buffs who didn't know the difference between a base station and a mobile unit.

The only reliable method of determining your skill level is to test it. If you're ready to accept the challenge, I've got the test that can prove your scanning ability.

What I am presenting is the first official scanning test. It's multiple choice. You simply darken the correct answer and return it. After your test is graded, you will be notified if you passed or failed. After successfully completing the exam, you will be awarded a scanning certificate.

The award has been professionally printed, and it is suitable for framing. Your certificate will be mailed in a large, protective envelope that has been marked, "do not fold." It's my personal way of guaranteeing that the certificate arrives clean, fresh and ready for display.



There will be three levels of expertise. Scanner buffs that pass the level one exam, will be presented the "Scanning Novice" award. Passing the level two exam, will earn you the title of "Scanning Specialist." Successfully passing the level three exam will earn you the prestigious title of, "Scanner Communications Expert."

Each test will be graded and your name and score will be entered into an official registry. This system will enable me to



"Catching" frequencies is easy with frequency counters from OptoElectronics. To win one for your scanning shack, check out the Treasure Hunt.

quickly replace any awards that become lost or damaged.

Knowing your level of expertise will also help me to respond to your letters. If you passed the level three test and are certified as a Scanning Communications Expert (SCE), don't be afraid to include that in your correspondence. When I respond to letters from certified SCE's, I'll provide detailed answers that won't insult your scanning ability.

These tests must be taken in order. It will not be possible to skip over the Novice and Specialist levels. To become an SCE, you must have successfully passed both the novice and specialist tests. On completion of each level, you will receive a new certificate. Hopefully, you can earn all three awards and then try for the endorsements.

An endorsement is a metallic seal that is placed on your SCE certificate. It will symbolize your expertise in several of the more popular areas of scanning. Currently, I'm working on endorsement tests for the public safety bands and cellular car phones.

This is an exciting time for scanner buffs. For the first time in the history of scanning, you can put your expertise to the test. The first step is to take the Novice exam. To receive the novice test, send \$10.00 dollars to Scanning Test, Box 695, Honeybrook, PA 19344. The fee covers the total cost of your test booklet, grading, and your certificate.

Here's how it works: When I receive your request, I'll mail

CONSERVE MY BATTERY POWER BY USING ME AT REDUCED VOLUME, THEREFORE I'LL BE ABLE TO LAST A FEW MORE HOURS. KEEP MY VOLUME LOW AND THEN WHEN THE NEED ARISES,

CRANK UP THE VOLUME!

Sammy the Scanner



NORTHEAST SCANNING NEWS:

212 W. Broad St., Paulsboro, NJ 08066

out the exam. After you answer all the questions (there's a six month time limit), you mail it back to me. Upon receiving your exam, I'll grade it. If you pass, I'll mail out your certificate.

By now, you should understand that there are three levels of expertise: Novice, Specialist, and Scanning Communications Expert (SCE). You cannot apply for the position of SCE, until you pass the Novice and Specialist exams. This month, I'm offering the Novice test. After you pass it, you're eligible to apply for the Specialist exam.

Are you ready to put your skills to the test? Do you think that you can eventually become certified as a SCE? If so, send for the test -- it's the only way to know for sure.

A Look Ahead

Since it seemed appropriate to kick off the scanning skills program with the January issue, we put off our complete coverage of cellular monitoring until a later issue. But, hey, stay tuned! In future months we'll have discussion of cellular restoration and monitoring, the controversial Electronic Communications Privacy Act, the best way to use frequency counters... Other surprises may depend upon what you send me in the mail; your contributions and suggestions play a big part in this.

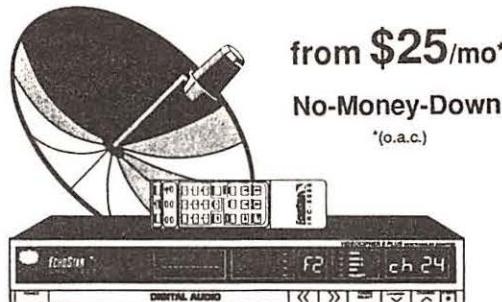
Treasure Hunt

Welcome to the start of the 1991 Treasure Hunt. To help everyone celebrate the New Year, Opto Electronics has donated two frequency counters. I've got one 1300 H/A, and one state-of-the-art UTC 3000.

Experienced scanner buffs are already familiar with the 1300 H/A. It features 1 megahertz to 1.3 gigahertz coverage, rechargeable batteries, high sensitivity and internal amplifier.

The UTC 3000 is an advanced, hand held frequency counter that can measure between 10 Hertz and 2.4 Gigahertz. The instrument is superbly crafted, and professionally finished

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in black, extruded aluminum.

All of the controls on the instrument are thoughtfully positioned, and the UTC 3000 has several new features that are exclusive to Opto's line of advanced frequency counters. I was personally impressed by the "bargraph," and the "hold button." Here's how they work.

The bargraph is a 16 segment display that reacts to signal strength. As the signal becomes stronger, the bargraph displays additional segments. Generally, if three segments are showing, there is a signal present that can be measured. With a little practice, the bargraph can be used to guide the user to the strongest point of the transmitted signal. And as we all know, that particular location will provide us with our best chance to catch a frequency.

After you catch the frequency, simply press the hold button, and the UTC 3000 will "freeze" the display. In the past, you only had a few seconds to memorize the captured frequency. With the UTC 3000, you simply press the hold button and the frequency remains in the display window.

You can see the UTC 3000 on the inside front cover of the November 1990 issue of *Monitoring Times*. To win the UTC 3000 or the 1300 H/A, use the November issue to answer the following questions.

1. What is the toll free order line for Opto Electronics?
2. Name the scanner radio that features Hyperscan.

3. Provide the page number that features a picture of a clown.
4. In what column can the word, "Heighthrophobia," be found?
5. Provide one NIS frequency for NAS, Dallas, Texas.

You can see Opto's full line of products by requesting Opto's, "Frequency Counter Buyer's Guide." Write to, Opto Electronics, 5821 Northeast 14th Avenue, Fort Lauderdale, FL 33334.

Frequency Exchange

Tired of cold weather, snow and ice? For a welcome change, let's visit Mountain View, California. Matt Vurek, lives in the "silicon valley," and provided the following list.

151.775	Stufft pizza delivery
153.845	County wide fire
154.830	Foothill College police
155.70	Santa Clara Sheriff
158.805	Fire, tactical
161.205	Southern Pacific Railroad police
161.550	Southern Pacific railroad
453.050	Public works
453.100	Ambulance dispatch
464.825	El Camino Hospital security
482.5125	Mountain View Police
482.7875	Mountain View Police
483.7875	Saint Clair Limousine Service
490.8625	GTE facility security

For our next stop, everyone will need their security badges. Ralph Fellows has provided over 100 frequencies for the Norton Air Force Base. According to Ralph, these are exclusive frequencies that are not commonly known:

20.1085	Tactical training
26.8135	Tactical training
75.00	ILS marker
138.075	OSI
138.175	OSI
143.425	Training
150.60	Base paging
163.5625	Command post link for 349.400
163.5875	Command post link for 407.375/413.125
165.0375	NAVAIDS maintenance
173.4375	Aircraft maintenance
251.900	Survival training/rescue
332.000	ILS runway #6
340.600	Air drop
408.00	Security police
1090.00	Test for 1030.00
1537.00 to 1541.00	Data uplink
2233.00	Audio/visual remote

Want the complete list? It's yours for one dollar and an SASE. Send your request to the Frequency Exchange, P.O. 98, Brasstown, NC 28902.

If you're from the Northern part of the country, these warm weather stops are a welcome relief. The fun continues as

we visit an anonymous listener in Southern Florida. However, be advised that when you leave Florida, a coat and hat will be necessary.

Martin County

39.102	Disaster prep.
154.310	County fire
154.920	Highway patrol aircraft
453.575	Turnpike aircraft
453.625	Turnpike patrol

St. Lucie County

154.665	Highway patrol
154.710	" "
453.300	County rescue
453.725	Aircraft to car

Okay, button your coats and pull down your hats, we're off to Edmonton, Canada. Harry Shute lives here, and he enjoys the cold, blustery winters. To help keep everyone warm, here is Harry's hot list of scanning frequencies:

461.6375	Traffic
461.850	Detectives
461.925	Task force (SWAT)
462.00	Dispatch, west end
462.275	Dispatch, south end
462.575	Dispatch, downtown
462.650	Information
462.850	Edmonton Mall police dispatch
463.5625	Detectives
463.6375	Detectives

In addition to the above frequencies, Harry has also provided us with several frequencies for the Edmonton Mall:

451.150	Maintenance
458.6625	Deep sea adventure
462.6125	Fantasyland operations
463.0875	Maintenance
463.5875	Security

Not in the mood for shopping? Are you the outdoor type? Well grab your saddle, pick a horse and let's take a ride with the Royal Canadian Mounted Patrol. Once again, Harry Shute has made all the arrangements.

154.680	Detectives
155.040	Detectives
155.310	Aircraft speed enforcement
155.430	Detectives
155.535	Dispatch
155.550	Dispatch
155.565	Dispatch
155.700	Detectives
421.4375	Edmonton Diplomatic Protection Service

That wraps up the Frequency Exchange for this month. If you want us to visit your town, send your frequency invitations to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902

MT in Prison

If you enjoy reading *Monitoring Times*, don't go to prison. *MT* has been banned from the Augusta Correctional Center, in Craigsville, Virginia. The warden, Larry Huffman, refused to allow an inmate to receive *MT*. Here is an excerpt from the letter that Warden Huffman sent to inmate, William Smith:

"Your publication, *Monitoring Times*, has been received. I reviewed this publication and determined that it violates division operating procedure 852, section VIII, E, 2. The violation of the guideline exists on page 32. Based on this information, I am disapproving possession of this publication."

Regular readers probably remember inmate Smith from a previous letter that I published in 1990. During that incident, Mr. Smith was placed in solitary confinement for sending me the prison radio frequencies.

When I poked fun at ol' Bill in that same edition, I got letters from all over the globe. Most people complained that I was taking advantage of Bill by publishing his letter. The American Civil Liberties Union also wrote and asked me to refrain from subjecting inmate Smith to further abuse.

What do you think? Should I continue to print inmate Smith's letters? Better yet, send your comments to the warden, here's his address: L. W. Huffman, Department of Corrections, Augusta Correctional Center, Box 1000, Craigsville, Virginia 24430.

Listening to Wired Telephones

Do you have a shortwave receiver at home? If so, tune between 4.5 and 8.8 megahertz and let me know if you can hear wired telephone conversations.

It seems that the time base oscillator of certain phones, can be modulated by the human voice. In other words, the microprocessor in the phone, is sending out a radio signal. If you live in a densely populated area, you might be able to legally monitor wire connected phones. Give it a try!

And the 1990 Winners are...

Here's a complete wrap-up of the winners of last year's Treasure Hunt. Congratulations one and all!

Month	Prize	Winner
Jan/Feb	(1) Scanner Radio	Larry Jones, Greensboro, NC
Mar/Apr	(2) ScanRecords "	Terry Ivey, Marshall, MI Thomas Howley, Canton, MI
May/June	(1) Scanner Beam	Jack NeSmith, Deltona, FL
Jul/Aug	(2) Frequency Counters "	Keith Mechler, Troy, IL J. Jensen, Largo, FL
Sept/Oct	(2) Sets of Books "	Art Hopkins, Ind., IN Larry Weisburg, Nadick, MA
Nov/Dec	(6) Amps/Converters	To be announced

NEW

An International Directory of Codes used by Government, Law Enforcement, Military, and Surveillance Agencies

James E. Tunnell
Edited by Helen L. Sanders

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■ AR-2515 Wide Coverage Scanner	\$679
■ AR-3000 Scanner	\$895
■ AR-900 Scanner w/cellular	\$256
■ ICOM R-71A HF Scanning Receiver	\$850
■ Collins R390A(Reconditioned/Calibrated)	\$750*
■ Japan Radio NRD-525	\$1,150
■ Sony ICF-2010	\$349
■ Sony ICF-7600	\$220
■ Sony Pro-80	\$350
■ RACAL RA-6790 (GM)/R-2174	CALL
■ AR-1000 Scanner	\$455
■ 3TF7 Ballast Tube - Brand New!	\$40
■ Bearcat BC-200XLT - w/Cellular restoration	\$275

* Cost includes Federal Express Shipping

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what's new?



"Highly Advanced" Intercom

Midland International has introduced what they are billing as "a highly advanced, three-channel FM wireless intercom." Known as the model 72-021, the new intercom features "hands free" communications -- when in the automatic mode it becomes voice activated, eliminating the need to push and hold buttons. It may, of course, be operated manually as well.

With three channels available, the 72-021 permits separate conversations to be carried to three different areas (four units would be required). Or, conference calls can be made on a single channel to all locations. A special "call" button feature transmits a high-level audio tone that alerts the receiving party of the operator's desire to talk and a "lock" button permits the full-time monitoring of another room. Range for the 72-021 is reported to be 500 yards.

Regrettably, Midland International does not provide retail prices to the media, asking only that interested readers contact them at 1690 N. Topping, Kansas City, Missouri 64120.

World Perspectives

Shortwave listeners can often be divided into two categories: DXers and news junkies. Certainly, shortwave provides a source of international news and information that is unparalleled

in the world today. The truth is that virtually no other source of news offers the breadth and depth of shortwave.

A one year old publication, *World Perspectives*, reflects this diversity by taking selected news and commentary that has been broadcast over the air and producing it in monthly printed form.

Printed on recycled paper by the non-profit People's News Service and delivered in an unusual 7" x 8 1/4" format, *World Perspectives* is divided by region, not by broadcaster but by origin of story.

Whether you find the publication revealing or biased will depend on your personal perspective. We suggest that you purchase a sample copy by sending \$1.75 to *World Perspectives*, Box 3074, Madison, Wisconsin 53704.

New from Bearcat

The Uniden Corporation, manufacturer of Bearcat brand scanners, has announced their new BC855XLT desktop scanner.

ALTERNATIVE NEWS AND ANALYSIS FROM SHORTWAVE SOURCES

World Perspectives

VOL. NO. 9 NOVEMBER 1990 \$1.75

INSIDE:

- *THE DISAPPEARED-6.9
- *FROM JOHNSTON TO THE GULF-7.7
- *EL SALVADOR TERROR-18
- *GULF REFUSENIKS AND OTHER CENSORED AFFAIRS-19-21

THE JERUSALEM MASSACRE: NOT A SURPRISE

After the initial shock waves of the Oct 8 Israeli massacre of Palestinians in which over 20 people were killed and over 300 wounded, some condemning facts against Israel have emerged and broadcast by two human rights groups, the Palestinian Al Haq and the Israeli Betzelem. Betzelem's Yvval Gimbel informed reporters that "the investigation reached the conclusion that shooting by the Israeli security forces was indiscriminate. Much of the shooting was done randomly from the hip, a method that is hardly an accurate way to hit a target." According to

SUFFER THE CHILDREN: PP 4, 10, 25, 26

Similar to their economy line of low profile, introductory scanners like the BC147XLT and BC177XLT, this latest model has added the 800 MHz portion of the spectrum (less cellular telephone coverage).

Looming on the horizon is a radical departure from the traditional low/high/UHF band scanners from Uniden. Being developed under the code number BC8200XLT, this new desktop will be Uniden's first effort in a wide-frequency coverage scanner to meet the growing demand for 225-400 MHz military aircraft reception.

Featuring 200 memory channels and much more rapid scan and search speed, the new Bearcat will hopefully be ready for the market next fall.

Another developmental model, the luxurious and advanced BC1000XLT, is still a "back burner" project, receiving little attention since it was originally conceptualized some ten years ago under the old Electra organization. Don't look for it anytime soon.

Wide Frequency Antennas

Although somewhat expensive when compared to competitive passive (unamplified) antennas, the Diamond D-505 mobile antenna and D-707 fixed base antenna offer remarkably improved performance. A side-by-side comparison between the D-505 and a top-selling, passive, mobile scanner antenna revealed significantly higher signal strengths on all frequencies.

The mobile and base versions come with a sensitive, wide-dynamic-range, low noise preamplifier module with adjustable gain. Remarkably, both antennas are capable of full 500 kHz through 1500 MHz frequency coverage, matching the new wide-frequency-coverage receivers and scanners.

Review:

LF Engineering Cure for Palomar Loop Antenna

Recently I was given a Palomar (LA-1) loop antenna to test and tinker with. The previous owner claimed that the antenna had poor sensitivity and was of little use to him as a longwave listener.

After performing some initial tests at my lab bench with the LF, WWVB and Omega loop antenna inserts provided, I found that it worked, but like the previous owner, thought that the sensitivity could use some improvement. The LA-1 did create good nulls and noise rejection when it was manually adjusted, but the sensitivity was a big drawback. What this antenna needed was a good low noise amplifier.

I decided to try the LA-1 loop antenna with the L-201 VLF preamplifier (circuit board without case or hardware \$33.00 from LF Engineering Co., 17 Jeffry Rd., East Haven, CT 06513). I first connected the LA-1 output in series with the L-201 loop antenna input (See figure 1). I then adjusted the gain of the preamplifier and noticed a dramatic improvement on an Omega signal from barely copying one Omega signal to clearly hearing four! The results were equally dramatic with WWVB

and beacons.

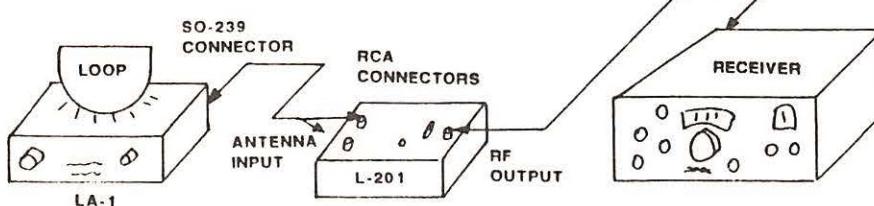
After evaluation and successful experimentation, I decided to permanently mount the L-201 circuit board inside the Palomar LA-1 cabinet. Using some standoffs and assorted hardware, I secured it inside the cabinet next to the existing LA-1 circuitry. I used the same 9 volt battery supplied with the Palomar LA-1 to power both circuits. (To extend the battery life I changed the series resistor for the LA-1 LED to a 4.7k ohm. The LED became a little dimmer but was still a good "on" indicator.)

RECORDED LF SIGNALS

Frequency kHz	Palomar LA-1	LA-1 with LFE L-201
194	S6	S9 +10
238	S2	S9
242	S2	S9
255	S1	S8
285	-	S7
360	S1	S9
378	S1	S9
404	-	S7

So don't discard that Palomar LA-1 loop antenna, just add the LF Engineering L-3201 preamplifier and you will have made yourself a new super desktop LF antenna. — Sal DeFrancesco, K1RGO

Figure 1



LA-1 and L-201 Preamp Setup

Ideal for low-profile installations, the two Diamond antennas offer the high performance of full size antennas without being compromised by their small size. Prices are in the \$140-\$190 range depending upon type of mount selected.

For further information, contact Grove Enterprises,

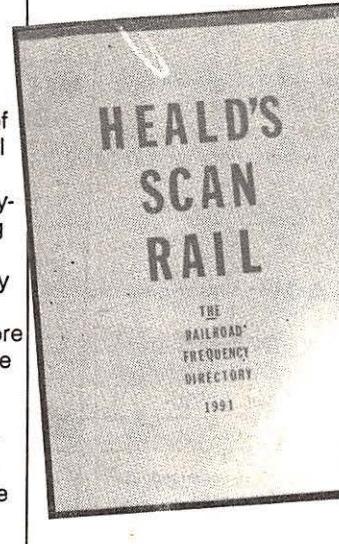
PO Box 98, Brasstown, NC 28902, or phone 1-704-837-9200.

Heald's Rail Scan

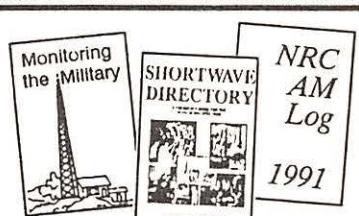
The romantic allure of the railroad lines still supports a large number of scanner hobbyists who enjoy monitoring rail line communications. And among the frequency directories published for this purpose, none is more comprehensive than Bruce Heald's new 1991 *Scan Rail*.

Transit and commuter lines, Amtrak, freight and passenger services—they're all here. Alphabetized by railroad and cross-refer-

enced by frequency and location, *Scan Rail* is simple to use. Its introductory pages and closing list of railroad attractions are quite informative.



Books for Every Radio Interest



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SHORTWAVE DIRECTORY, 7th ed. By Bob Grove. Utility monitoring's best friend. Covers every bit of the 10 kHz to 30 MHz radio dial. Accurate and easy to use. \$19.95 +\$1.00 ship.

NAT'L RADIO CLUB AM LOG

1991 Edition contains 6000+ AM listings. Info like: location, frequency, transmitter power, format, news network, address, etc. 3-hole punched. \$19.95 +\$1.00 ship.

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New book from WRTH folks. Details of English broadcasts on AM, FM and SW in major travel destinations in a graphic format. Handy size, cheap. \$9.95 +\$1.20



1991 World Radio TV Handbook is just \$17.95 POST-PAID. Covers SW, longwave, AM, FM & TV worldwide. Station profiles include address, phone, skeds, personnel, languages, maps & more. 45th edition.

1991 Passport to World Band Radio A huge compilation of who's broadcasting what, when, where in a graphic format. Plus interesting features and Larry Magne's receiver reviews. \$14.95 +\$1.55 ship. An annual treat!

CITIZEN'S GUIDE TO SCANNING Bob Kay shares his extensive experience with scanning. You CAN hear more than fire and police. \$12.95 +\$1.20 ship.

BOB KAY'S SCANNER ANTENNA PLANS Non-technical scanner antenna plans to build, each for under 10.00. Five designs: beam, bow-tie, ground plane, cordless phone and longwire. \$12.95 +\$1.20 ship. 3-hole punched. Bob built them on his kitchen table.

DX Radio Supply

Box 360, Wagoner, PA 19376

The 1991 edition is \$9.95 from Heald, 6886 Jefferson St., North Branch, MI 48461.

Trucker Road Atlas

Road atlases and maps abound, but not like this one. For truckers and other long-distance drivers, Gousha's *Trucker Road Atlas* is loaded with information not found in any other atlas. Giant color maps of U.S. states, Canadian provinces and major cities have boldly-accented truck routes. Truck stops and weighing scales are flagged as well.

Road designations are prominent; county names, city boundaries, points of interest, military air fields, recreation areas, elevations and geological features are all included.

Special appendix sections provide rules of the road; DOT, ICC and IRS regulations and contacts; size and weight restrictions; hazardous materials markings; extensive mileage charts; lists of backhaul contacts and an industry resource directory.

Whether you are a trucker or simply interested in knowing what the truckers know about the highways, this is the consummate guide. You can find it for \$16.95 at Dalton and Walden bookstores nationwide.

Radio-Log Master Resource

If you like to dabble with your home computer and feel comfortable entering your own BASIC programs, Frank Vacanti's simple programs will help organize your monitoring efforts. The "Radio-Log Master Resource Computer Tool-Kit" also shows how to utilize a word processor program for logging and even teaches methods of using computers for radio monitoring tasks.

RADIO LOG-MASTER RESOURCE AND COMPUTER TOOL-KIT



Several easy-to-photocopy style and graph sheets assist the user in manipulating his data for customized maps, lists and charts.

Send \$12.50 plus \$2.50 shipping to Frank-Art Radio Products, Box 12282, Dept. M, Boulder, CO 80303-2697.



Dallas-Ft. Worth Frequency List

Several editions have transpired since the beginning of this unique publication which centers on Dallas-Ft. Worth, but contains information usable nationwide. Ken Winters has compiled "DC to daylight" (actually 45 Hz to 10525 MHz) frequencies verified through monitoring of the spectrum, and usable by both shortwave and scanner enthusiasts.

In truth, only the VHF/UHF lists concentrate on Texas; the shortwave lists are global, and even the scanner

listings contain scads of nationwide federal assignments. An interesting "Do Not Listen to These Frequencies" section, reprinted with permission from December 1987 *MT*, lists mobile telephone frequencies which are forbidden to monitor.

A number of glossary references provide additional insight into monitoring, covering definitions of terminology related to monitoring.

The *Dallas/Ft. Worth Frequency List* is available for \$19.95 from D/FW Frequency List, PO Box 171473, Arlington, TX 76003.

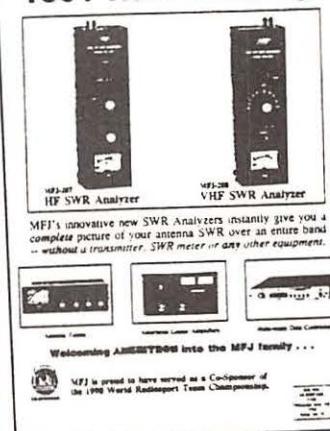
Airport/Military List

The *Frequency List and Directory of U.S. Airports with Military Installations* is an eight page computer printout that lists, as its name implies, U.S. airports with military installations.

The list is arranged by facility name, followed by state, identification and frequencies (base operations, tower, ground, metro, ATIS, miscellaneous and notes). The price is \$6.00 plus 1.25 shipping from Greg Shepherd, P.O. Box 253, Gridley, Illinois 61744.

New Catalogue from MFJ

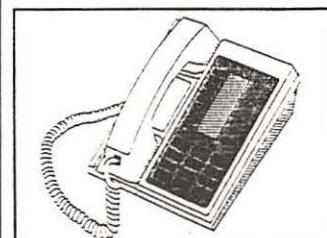
MFJ ENTERPRISES, INC. 1991 Ham Catalog



MFJ, the Mississippi-based manufacturer of antenna tuners, SWR analyzers, coax switches, Morse code keys and other accessories, has released their new 1991 ham catalogue. You can get a copy free of charge by writing to MFJ at Box 494, Mississippi State, Mississippi 39762. A number of their products are of interest to shortwave listeners as well.

HOW TO:

"SAVE \$\$\$'S ON YOUR TELEPHONE BILLS"



IF YOU HAVE A TELEPHONE - YOU NEED THIS MANUAL
1991 EDITION
INTERNATIONAL (U.S.-CANADA VERSION)
PRESENTED BY VIC MORROW
300001 100-100

Save on Your 'Phone Bills

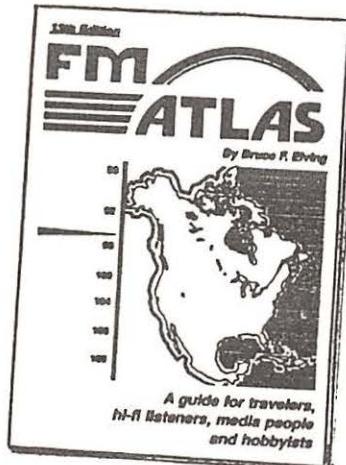
We all recoil every time our telephone bill arrives in the mail. "Who made this 18 minute call to Singapore?!" While Vic Morrow doesn't pretend that he can reduce telephone rates, he does guarantee he can save you money on your services in his publication, *Save \$\$\$ on Your Telephone Bills*.

With over 200 suggestions and tips to choose from, some of these are bound to be useful in your daily situation. None is illegal, none is "phone phreaking." These are all simple, easy-to-follow pointers on how to get maximum value for your telephone calls.

Are there less expensive substitutes for call waiting? What is the truth behind the 900 numbers? Is buying cheaper than renting? When are the best times to call?

How can you avoid operator charges? These are only five subjects covered, and there are over 195 more!

If you think Morrow could Save \$\$\$ on Your Telephone Bills, send \$19.95 (postpaid) to S.T.S. Services, 7689 Drolet St., Montreal, Quebec, Can. H2R 2C6.



FM Atlas:

New 13th edition

The hobby of FM DXing -- tuning in distant FM broadcast stations -- has captured the interest of a growing number of radio monitors. In part, this is because reception of distant FM stations peaks at about the time when other frequencies fade.

There are other reasons, of course. You can successfully FM DX using virtually any radio. The FM broadcast band is more manageable than other bands in terms of the number of stations. And many find the casual nature of the hobby to be more conducive to relaxation.

Bruce Elving's *FM Atlas* has, over the years, become the FM DXer's bible -- literally a 192 page roadmap of FM stations in the United States, Canada and Mexico. Here you'll find FM stations listed by frequency and state (including program formats, stereo and technical data, station identifications, subcarriers, and more).

Whether traveler or DXer, *FM Atlas* will serve double duty in the shack of any radio monitor. *FM Atlas* is available for \$10.95 plus .90 book rate or 2.30 UPS from DX Radio Supply, P.O. Box 360, Wagontown PA 19376.

Radio Rope

SC, a company that periodically sends press releases to *Monitoring Times* about new products available for licensing, has announced that, well,

we'll let the folk from ISC explain it.

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Making the Mail Run

If you promise not to tell Larry Miller, I'll let you folks in on a little secret. Sometimes I get confused.

Actually, after the *Monitoring Times* convention, I was in a bit of a muddle as to what to write next. All the folks at the show gave me so much super feedback that I couldn't decide which way to go in imparting radio lore to everyone.

Ahhh . . . Is there a point to this expose of editorial expertise, Uncle Skip?

Hey, pal, have I ever let you down?

Well, something happened to lead me back to the word processor. It was a little pamphlet I found stuffed in my mail box with all the bills. It was so patriotic looking with its red, white and blue inks, too. It was the United States Postal Service's "Guide To Complete Addressing." You, too, received this teeny tome of wisdom back in October. This mailing from the Big Post Office down in Washington was meant to be the last word in addressing our mail.

However, take a second look, Compadre. This booklet gives you a great guide for getting mail moved around the good old US of A, but it doesn't even begin to address the complications of sending mail around the world.

Many beginners find that full enjoyment of the shortwave hobby involves a few tussles with the international postal system. Therefore, always standing at the ready to give Uncle Sam a hand, I present . . .

BEGINNER'S GUIDE TO WORLD CLASS MAILING

No red, white and blue inks, just cold hard facts in black and white.

In the United States, we have always been blessed with a pretty nifty postal system. In spite of the junk mail and occasional magazine covers that arrive sans their pages, our system is efficient. Just scribble a few lines on an envelope, slap on a stamp, and you are in business.

Well, sad to say, it's just not always that good as you move mail around the world. Anyone who has been in the shortwave hobby for any length of time probably has half a dozen tales to tell about sending off a QSL report to Radio Freedonia only to have either the report or the returning verification end up in Never Never Land.

So we will take a look at a few tips to make sure your mail gets to its destination and also some ideas about how best to get something back.

Envelopes

You are probably going to want to go with something of higher quality than what you can sneak out of your office when the boss isn't looking. Go to a stationery store and purchase standard air mail envelopes that have a printed lining that makes it difficult for curious types to see what is going on. If you can't locate lined envelopes, you will want to wrap your reception report and any return postage in a piece of opaque paper prior to inserting it in the envelope, again, to keep it away from prying eyes.

Stay away from brightly colored papers and envelopes. Anything that may draw special attention to your letter when it is in a pile of other mail is bound to bring about closer inspection. This could lead to some less than honest person bringing your letter's journey to an abrupt halt because they felt there might be some value in checking out the contents of such an interesting envelope. As far as possible, stick to the "plain brown wrapper" imperative.

Stamps

The world is full of very beautiful commemorative stamps. Many beginners get caught in the fancy stamp trap. It's hard to resist the urge to send your reception report out with the latest and greatest ultra-colorful commemorative stamp depicting Elvis Presley's 1968 Comeback Concert.

Just remember, folks, there are more stamp collectors in the world than there are DXers. If you use colorful stamps, you are just begging to have your envelope diverted into somebody's stamp collection. Make sure you use the most plain vanilla air mail stamps to get your letter to its destination.

If you want to include a few colorful commemorative stamps inside your envelope as a gift, that's okay. Just remember to wrap things up so they can't be seen when held up to a light and don't forget that the station on the other side of the world cannot use US stamps to get a verification back to you. We will talk more about return postage a little while later.

On the Outside

So how should you go about addressing this

plain envelope covered with plain stamps? Needless to say, you will want to print your envelope data out via a typewriter or by using large legible block letters – ALL CAPITALS JUST LIKE UNCLE SAM REQUESTS.

First you are going to have to change your views concerning return addresses.

Most serious hobbyists opt to purchase the services of a post office box. This has several advantages, the most important of which is privacy. There is a famous story told in DX circles about a shortwave listener who found a South American station engineer's daughter waiting on his doorstep when he went out to get the morning paper.

Remember, your efforts at QSLing are well intentioned, but some folks might try to take advantage of your good nature to meet their own needs. A post office box allows you to exercise some basic control over any "ongoing" relationships you may develop.

If you are a true believer in Murphy's Law, you will also note that when your mail goes to a post office box, it goes through one less set of hands before you get it in your own. Not such a bad idea when your return mail has traveled halfway around the globe.

Post office box or not, you will want to change the way you actually write out your return address on your outgoing envelope.

To begin with, you will NOT want to include your name in the return address block. This is a subtle but all too often overlooked strategy. Since the USA is a great melting pot of people, many of our names obviously betray our ethnic heritage or national origin. Well, around the world, some groups still do not get along so great with other groups. If your first or family name gives some letter sorter an excuse to get his or her nose out of joint because of what your ancestors did to theirs, your letter could end up in the waste basket.

You can only control this on the outgoing mail because your name will need to appear on your incoming envelope; however, you have taken steps to reduce the possibility of intervention by 50 percent.

Your return address should only include your PO box or street address, town, state, zip code and below all these on a separate line, U.S.A. or United States of America. This isn't just a statement of patriotism, it is essential on mail going outside of the "home of the brave and land of the free."

Okay, so let's move on to the station's address as it should appear on your outgoing envelope.

For most beginners, the obvious question is going to be: "Where do I get the station's

address from?" Many broadcasters give their mailing address within their programming, but what if you want to write to a station that didn't?

There is one excellent source for accurate station address information: the most current edition of *The World Radio TV Handbook*. With this work, you simply look up the address of the station you are seeking and print or type the address; again, use all capital letters to keep the mailperson happy, as you would on any letter.

Under the complete address, write the full legitimate name of the country you are sending this report to. For example, if you were reporting to Radio Beijing -- remember back before Nixon when it was called Peiping -- you would want to address your letter to The People's Republic of China. If you addressed your letter to Red China or Communist China, it is very unlikely you would get a response. Also, simply putting China would not do because you might be vectored off toward the Republic of Taiwan. This would only be useful if you were QSLing Voice of Free China. This bit of confusion may just point out how important it is to put an accurate address on your envelope.

Return Postage

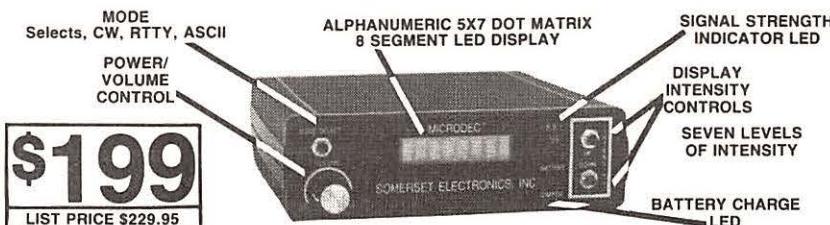
Okay, we've got the envelope squared away and we have the report inside it. Before we seal things up you must give some consideration to return postage. Most stations are unlikely to provide you with any sort of reply unless you provide them with the postage to get the verification back to you. First things first -- a foreign country cannot use United States stamps to send something back to you. So how can you help along a reply? There are two usual schools of thought.

The first is that you can use something known as an International Reply Coupon (IRC). IRCs can be purchased at most post offices. If your postal clerk gives you a funny look, ask to see the postmaster, because any post office can obtain these coupons or direct you to where they can be purchased.

One coupon can be redeemed for equivalent postage of 1/2 ounce of surface postage in most countries. Notice, I said most. Also, as you will discover when you try to purchase these puppies at your neighborhood post office, not too many folks know how to make use of these coupons. They are expensive, forcing you to pay more than air mail postage for a reply value of surface postage, meaning you would need to include several IRCs with each mailing to ensure a prompt reply. This leads us to the second solution.

Usually cheaper and infinitely easier, you can obtain mint (unused) stamps for the country in question. This is not really as hard

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as it sounds. Check the yellow pages for stamp dealers who cater to stamp collectors. You can also take advantage of the DX Stamp Service provided by William J. Plum, 12 Glenn Road, Flemington, NJ 08822. A stamped self-addressed envelope to Bill will get you a listing of currently available foreign air mail stamps for most countries.

There is one more process that some people resort to as return postage -- call it school-of-thought 2-1/2. Some people send along a dollar or two. I have even seen reports of five and ten dollar bills being used as bribes. Old Uncle Skip does not recommend this system even if it does prove effective at times. Whenever you send money through the mail, somewhere along the line it crosses the path of some rotten character who can smell money and it quickly disappears into someone's pocket.

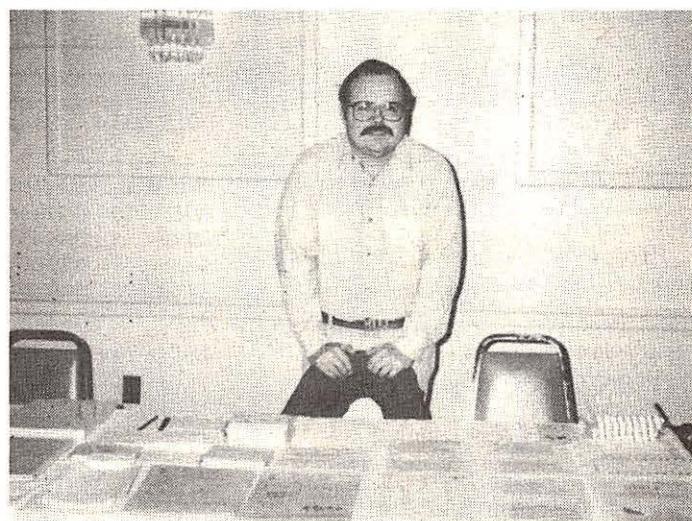
The other problem I have with this idea is that it sets up other folks trying to QSL in the future. If you send some station engineer a couple of greenbacks, he may come to expect it from everybody, thwarting the whole spirit of the hobby. If you want to drop in a couple of pretty collectible US stamps or a few postcards or stickers from US radio stations, that's kind of neat and helpful, but cash gets in the way in the long run.

Signed, Sealed, Delivered

Now everything is in the envelope and you have made sure nobody can see inside when they hold it up to the light, right? Now seal the envelope, and I do mean seal it. Make sure that the flap is completely and totally closed so that there is no possibility of it accidentally coming open giving who knows who access to your enclosures. You can use extra paper glue to make sure everything is tight if you really want to do a good job.

Now all you have to do is wait by the mailbox for your reply. This process may seem a bit complicated at first but it will become second nature as you get more involved in our hobby. Believe me, before very long you will be on a first name basis with all the clerks at the post office.

mt



You can buy mint foreign stamps from a dealer or from Bill Plum's DX Stamp Service.

More Secrets from the Salt Flats

In December 1989, Steve Douglass wrote a feature for *Monitoring Times* called "Probing the Secrets of Nellis Air Force Base." In the article, Steve described several of the "Black" programs that have surfaced from the Nevada desert. He also provided some insight into Operation Red Flag, the United States Air Force's Top Gun equivalent. To top it all off, Steve provided enough frequencies to keep upper echelon brass snorting and stomping for weeks.

This month, let's take an expanded look at the Nevada desert and add to Steve's excellent beginning. Our guide is Jim from Colorado. Jim picks up the story from here.

"My list of frequencies comes from mostly DMA (Defense Mapping Agency) publications and the results of a couple of trips through the area," says Jim. "Last summer, I drove from Tonopah to Ely across the central part of Nevada. As I headed east from Tonopah, I saw a group of buildings southeast of the city. Looking between the hills east of Tonopah, I spotted what I suspect was a F-117A stealth fighter base near the town.

"Unfortunately I didn't have time to stop and see if there was any activity or play with the search feature on the radio to try and come up with approach and tower frequencies for the field. I did hear several controllers on the Tonopah 'Nellis Control' frequency tell pilots to '...remain tactical...' which I presume means not to mention frequencies on the air.

"If people are interested in listening to a lot of military aircraft activity close to a metropolitan area, the Hill Air Force Base bombing range and associated MOAs (Military Operating Area) west of Salt Lake City are about a 1-1/2 hour drive west on I-80 from town and are very active areas to monitor. Wendover, on the west side of the salt flats is a good place to spend the night and work between the two towns. Along I-80 this is a good place to hear and see military aircraft. Just a suggestion if someone is looking for a place to get their feet wet in the hobby real fast."

Here is just a sample of Jim's list for the Nevada/Utah desert area.

Nellis AFB (Home of Operation Red Flag)

124.95/279.7	Approach control
134.10/353.6	Departure control
126.20/324.3	Tower
121.80/275.8	Ground control
120.90/289.4	Clearance delivery
372.2	Aircraft to operations
270.1	ATIS (Automatic Terminal Information Service)
381.3, 320.0	TAC command post (Raymond 22)

257.35/259.95	MAC	324.8	Metro
134.10/279.7	and 124.95	263.6	Desert control
	Las Vegas Terminal control	310.6	Desert data
385.5, 321.1	Las Vegas Approach SFA (Single frequency approach)	341.0	B-16 Range control
283.0	Nellis Squadron Common channels	271.4	B-17E Range control
343.6	LA center, north	267.4	B-17W Range control
		265.8	B-19 Range control
		353.0	B-20 Range control
		233.7	Mustang (TACTS/Checkin)
124.45/392.1	Wilson Creek	363.4	Gold (primary)
126.95/338.7	Tonopah	249.8	Silver (primary)
119.35/253.4	Beatty	318.5	Gold (secondary)
126.65/343.0	Las Vegas	336.9	Silver (secondary)
124.45/392.1	Caliente	305.8	EW (primary)
126.65/343.0	Mormon Mesa	281.2	EW (secondary)
		282.8	SAR common
		266.8	Brace common
			Hill AFB (Ogden, Utah)
		122.85/372.2	Aircraft to operations
		121.10/301.5	Approach,departure
		126.20/236.6	Tower
		121.60/275.8	Ground
		124.10/335.8	Clearance delivery
		252.1	419th operations
		381.3	Hill command post
		375.2	Hill Metro
		311.0	SAC primary
		321.0	SAC secondary
		126.00/307.2	Approach control
		316.7	Approach control
		389.8	Approach control
		289.6	Hill tower
			Michael AAF (Dugway Proving Grounds)
		126.20/248.2	Tower
		41.5/241.0	Control tower
		36.1	Range control
		134.10/301.7	Clover control
		311.3/233.4	Clover control
		339.0	Unknown
			Eagle Range
		298.6	Range Control/Gandy MOA
		351.0	Range tower

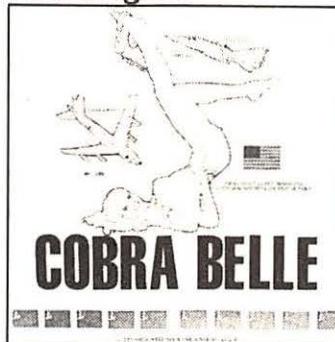
Finally, a friend here in the southeast recently sent some interesting charts for the Department of Energy's National Test Site, which is next door to Nellis AFB. For those of you with the map that was published with the Douglass article, look at Groom Lake's position on the map. Just to the southwest is the test site.

He has a theory that this section of the world has a lot more going on than most people realize. What better place to fly prototype aircraft, than over an area where the people living and working are doing work of an equal or greater level of secrecy?

My thoughts exactly. I would like to thank all who provided information for this segment of the column.

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SAC Bomb Plots revisited

Hey folks, I get mail and Robert Kelty has commented on the SAC Bomb Plots mentioned in the June/Oct columns. First by way of explanation, a SAC plot is where SAC bombers go to practice dropping bombs. Really quite simple. The bomb plot is marked and bombers make runs on the target, release their weapons and someone on the ground scores the drop and passes it back to the aircrew. This is how they train on weapons delivery techniques.

Now, Robert says his frequency info doesn't jive with the frequencies I published for June. Robert says he uses the 1982 IRAC microfiche as his basis for his research and wanted to know where I got my information.

Well, Robert, these frequencies came out of an official DOD publication. This pub shows all the IR/VR/AR routes and as part of the routing on some IR (Instrument Routes) a run on bomb plots is included. As an aid in planning, the bomb plot frequencies are included in this publication. I can personally guarantee the accuracy of the frequencies published.

Robert also said that based on his research FE Warren AFB is another location of a SAC bomb plot with a frequency of 271.9. La Junta, Colorado, bomb plot uses a frequency of 258.2. We still do not have frequencies for Scobey, Montana, as of yet. Robert also mentioned that 300.6, 356.8 and 363.9 are nationwide allocations for SAC bomb plots.

Robert, thanks for the info and I will be looking forward to the next edition of the *Military Radio Systems* directory when it is published. Be sure to keep us posted.

Germany again

A monitor station in Landstuhl, Germany, has sent some updated stuff for that neck of the woods. Due to German monitoring laws I will not divulge his name. Here is his interesting list of government and military frequencies:

173.945	German police
169.085	German police
30.75	Military medical helicopter (Medevac)
37.48	Ramstein weapons maintenance
38.27	Ramstein maintenance locator
37.365	Ramstein flight line maintenance
37.29	Ramstein fuels branch
34.825	Ramstein electronics repair branch
34.94	Ramstein maintenance
35.40	Ramstein maintenance control
34.88	Ramstein maintenance
38.35	Ramstein fuels
34.795	Ramstein maintenance
37.36	Ramstein weapons maintenance
72.275	Aircraft control
73.525	Ramstein maintenance

123.55 Ramstein tower
138.90 Ramstein (*approach west of Ramstein paired with 378.4-Rod*)
119.65 Ramstein approach (*Saarbrucken departure-Rod*)
119.525 Ramstein (*usage not given*)

Here are a few more from my own personal files:

299.5	Pilot to dispatcher
277.7	ATIS
378.4	Zweilbrucken depart
129.05/358.5 E of Ramstein approach	
122.1/267.6/277.2/257.8	Ramstein tower
130.4/375.0	Ramstein ground control
250.55	Ramstein clearance delivery
234.4	MAC airlift
315.35/385.15	Command Post Have Quick
360.55	Command post
259.4	Ramstein Metro (weather channel)
379.5	Supervisor of flying control

I hope the additional frequencies help. The 138.075 frequency is OSI and is not aircraft band, just above it actually. Thanks a bunch for the list and here's a fresh cubo for the effort.

Miscellaneous from the mailbag

Roger West up Wisconsin way has checked in with a nice list of frequencies from various locations. Hope you enjoy it. Thanks to Roger for the list. I hope your group is doing well and please feel free to check in anytime.

Fort Polk Army/Air Force at Leesville, LA (5th Infantry Div/Mechanized)

41.50	119.0	248.2	108.4	Tower
121.8	248.0			Ground control
40.95	143.2	373.3		Flight following and range control
41.30	123.45	374.2		Poe operations
40.35	118.45	126.2	342.5	PMSV: Metro (weather)

There are a lot of helicopters in use at Polk and they also have a helipad on the base.

Air Force Reserve and Air National Guard at Wold-Chamberland Field at Minneapolis/St. Paul International Airport

351.2	Pilot to dispatcher
255.4	Flight service station
284.7	335.2 357.4 App/Dep
348.6	Ground control
257.6	Tower
314.2	133rd TAW command post
165.137	934th TAG maintenance
163.4875	934th TAG security
252.1	351.2 934th TAG command post (abstain)
164.3	934th TAG commander

Veterans Administration Hospital at Minneapolis/Fort Snelling National Cemetery at Minneapolis

30.17 162.125 162.225 165.1875 operations

Army Corps of Engineers

164.7 Reservoir at Eau Galle, WS
163.410 Locks and Dams on Mississippi

Federal prisons

170.875 Primary F-1
170.925 Riots/Escapes F-2
170.650 Emergencies F-3

Chequamegon National Forest in Northern Wisconsin

164.125 164.825 172.225 415.325

U.S. Post Office

Minneapolis 163.375 164.10 164.2
St. Paul 163.0

Ice Advisory Service

A hundred years ago, the shipping season in Canada began when the ice broke up and ended when the ice started forming. Goods were either stockpiled for the winter or transported via rail from ports which were open. In more temperate climates where ice does not form, the shipping season continued year round. Many ports, such as Montreal, offered a prize to the first ship to enter the harbour in each new year. This would usually happen about mid April.

The wonders of modern technology have extended the shipping season to be year round in all but the arctic and parts of the Great Lakes. Prizes such as Montreal's gold headed cane are still keenly competed for, but usually in the first week of January.

Ice is one of the strongest forces in nature. It can send a ship off course, and it can crush one just as easily. In order to deal with the problems of winter navigation, the Canadian Coast Guard operate an Ice Advisory Service. This service offers ship captains advice on the best route to take, current ice conditions and whether an icebreaker escort will be required.

On the Great Lakes and St. Lawrence River, radio messages concerning icebreakers and ice conditions will be handled on VHF frequencies. On the east coast, however, VHF, MF and HF are used, and therefore this interesting traffic can be



Modern technology has kept harbors open almost year 'round. But it's still a tricky business, and the Canadian Coast Guard ice breakers play an indispensable role.

TABLE ONE
Schedule of Information Broadcasts

Station (Callsign)	Freq.	Time UTC
Comfort Cove, Nfld. (VOO)	2598	0010, 0803, 1540
Labrador, Nfld. (VOK)	2598	0150, 0720, 1450, 2050
Riv. au Renard, Que. (VCG)	2598	0035, 1335
St. Anthony, Nfld. (VCM)	2598	0110, 0740, 1520
St. John's, Nfld. (VON)	2598	0133, 0850, 1748, 2235
St. Lawrence, Nfld. (VCP)	2598	0820, 2125
Sept Iles, Que. (VCK)	2598	0245, 1918
Stephenville, Nfld. (VOJ)	2598	0703, 2205

Morse Code:

Labrador, Nfld. (VOK)	444	0220, 0820, 1420, 2020
Mont Joli, Que. (VCF)	446	1530
Montreal, Que. (VFN)	420	1510
Quebec, Que. (VCC)	474	1520
Riv. au Renard, Que. (VCG)	434	1550
St. Anthony, Nfld. (VCM)	489	0210, 1305
Sydney, N.S. (VCO)	464	0100

heard at great distances.

Vessels entering either the Gulf of St. Lawrence or Cabot Strait are expected to send a message via a Canadian Coast Guard Radio Station at least 24 hours before their arrival in these waters. The message, addressed to ECAREG CANADA, gives the vessel's position and destination,

whether it is loaded or in ballast, its ice class and the classification society.

The ice class of a vessel refers to a rating of a vessel's ability to withstand the pressures of ice. A classification society is an organization responsible for registering and classifying ships. The classification of a ship is a rating of its general condition and seaworthiness. The classification will determine, among other things, the insurability of a ship. Lloyds is the best known of the classification societies and their best rating is 100A1.

Once a vessel has contacted the ice operations office (ECAREG CANADA) it will remain in contact until it reaches its destination. After the initial contact, the ice operations office will provide information about current ice conditions and suggest the best route to the ship's destination, taking into account the current conditions and the ship's ability to navigate in ice. An icebreaker escort may also be arranged if this appears necessary and an ice breaker is available.

Vessels on the Gulf of St. Lawrence and the St. Lawrence River, which are departing from Sept-Iles or ports west of there, will obtain their ice information through the appropriate traffic control station on VHF.

As part of the Ice Advisory Service, Canadian Coast Guard Radio Stations regularly broadcast ice bulletins which will consist of a summary of current conditions,

a forecast of conditions anticipated and, when appropriate, a suggested shipping route through the area covered by the bulletin.

Ice bulletins are part of regularly scheduled information broadcasts. Table One should help in finding these upper sideband broadcasts.

The Canadian Forces base at Halifax, callsign CFH, broadcasts facsimile ice charts on 4271, 6330, 10536 kHz and 122.5 MHz at 0014-0032, 1101-1120*, 1301-1320*, 1401-1420*, 2201-2220, and 2301-2320 hours UTC. (The times marked with an asterisk [*] also use 13510 kHz as an additional frequency.)

The Canadian Coast Guard, in conjunction with Environment Canada also broadcasts facsimile maps of ice conditions from aircraft making daily reconnaissance flights. The maps are broadcast on the following schedule, as soon as possible after the aircraft is airborne. The "H" in the schedule means "hour".

From Summerside, P.E.I.

H +00 to H +19 UTC	7708.1 kHz
H +30 to H +49	14624.6

From Gander, Nfld.

H +20 to H +39	7708.1
H +50 to H +09	14624.6

From Ottawa, Ont.

H +40 to H +59	7708.1
----------------	--------

Canadian Coast Guard Ice Breakers also will make broadcasts on 14770.0 kHz using the following schedule:

Vessel no. 1	1630-1649 UTC
Vessel no. 2	1650-1709
Vessel no. 3	1710-1729
Vessel no. 4	1730-1749
Vessel no. 5	1750-1809
Vessel no. 6	1810-1829
Vessel no. 7	1830-1849
Vessel no. 8	1850-1909
Vessel no. 9	1910-1929
Vessel no. 10	1930-1949

The frequencies 14624.6 and 14770.0 are primary frequencies. Alternate frequencies of 3251.1, 4616.0, 6915.1, 8113.1, 10155.1, 10169.1, 12055, 13440.0, 14440.0, 15642.1, 17443.1, 18168.1, 20168.1, and 20530.1 kHz may also be used for unscheduled broadcasts to the ice centre, air tactical support and intership tactical support, and when the prevailing propagation conditions require. Tactical support in this case means directing ships through the ice.

Pervading ice conditions will dictate which vessels will be assigned to which areas; therefore the Coast Guard's operational orders will determine which vessel makes a broadcast on which schedule. The following are the ice breakers in the Canadian Coast Guard fleet which may be found making these broadcasts. The callsign is in brackets after the ship's name.

Ann Harvey (CGAH)
des Groseilliers (CGDX)
Edward Cornwallis (CGJV)
George R. Pearkes (CGCX)

Henry Larsen (CGHL)
J. E. Bernier (CGBT)
John A. MacDonald (CGBK)
John Cabot (CGDJ)

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should be your first consideration."
Gordon West WB6NOA,
Worldradio Nov '89

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It really motivated me and it's a great way to test
my progress. The learning is a natural by-product
of the fun I am having."
Jim Bait KA1TGA,
73 Magazine Review Jan '90

"Thanks to your study program I was able to
handle the examination confidently and passed
with flying colors. If the Extra Class program is
as helpful as the Advanced Class was, I look
forward to working with it." WA0NDF

"Using *QSO Tutor* made studying for the exam
enjoyable and interesting, thanks to your program
I passed the technician test with a perfect score."
N3GME

"I easily passed my Advanced Class test on the
first try thanks to your great software!!"
WA3WOM

"Thanks for thinking of us hams. Your program
has eliminated the worry of the Theory part of the
test for me." KA3RHW



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* Entry class license (Novice) requires passing a theory exam
covered in this program and copying Morse code at 5 words per
minute. FCC application forms are available on request, free of
charge. Tests are administered by local hams, call for more details.

Louis S. St. Laurent (CGBN)	Sir John Franklin (CGDT)
Martha L. Black (CGCC)	Sir Wilfrid Laurier (CGJK)
Norman McLeod Rogers (CGBZ)	Sir William Alexander (CGUM)
Pierre Radisson (CGSB)	Tupper (CGCV)
Simon Fraser (CGSJ)	William (CGCF)

The Coast Guard Radio Stations which are listed above also handle messages and telephone calls between ships and the ice operations office. The frequencies which are most likely to carry this type of message (upper sideband) are:

Comfort Cove (VOO)	2582/2206
Labrador (VOK)	2514/2118 4376/4081.6
Montreal (VFN)	2514/2118
Quebec (VCC)	2582/2206
Riv. au Renard (VCG)	2582/2206
St. Anthony (VCM)	2514/2118
St. John's (VON)	2538/2142
St. Lawrence (VCP)	2582/2206
Sept Iles (VCK)	2514/2118
Stephenville (VOJ)	2514/2118

Operating a ship in ice is very tricky business. Once caught in the ice, a ship can lose maneuverability and be carried off course by the wind or current. While the ship may be broken out of the ice by her own action or with the assistance of an ice breaker or tug, the time spent icebound can be very tense.



Handicapped Code -- Yes or No?

The ARRL Weighs in

You may remember reading about the FCC's decision to grant waivers for the 13 and 20 word-per-minute Morse code test to hams with disabilities. To make a long story short, one such disabled ham, unhappy with the response he was getting from the U.S. government regarding his plight, went to King Hussein of Jordan who apparently rattled some cages in the U.S. government.

Did his cage rattling work? Let's put it this way: the *W5YI Report* says that the FCC has already granted 196 waivers with over 40 pending at the Commission's license processing plant in Gettysburg, Pennsylvania.

Now comes word that the American Radio Relay League -- whose representatives at one convention reportedly wore badges saying "Shut Up and Learn Code" -- has expressed some major dissatisfaction with the way the FCC is handling the Notice of Proposed Rulemaking regarding the waivers.

Here is what the League has to say:

"[F]or some reason not explained in the Notice or elsewhere, the Commission is rushing headlong toward resolution of this proceeding, offering only a token comment period in the process.

Further, "[this same action was] specifically deemed 'not sound licensing policy' only eight years ago..." (In 1982, the FCC decided not to grant handicapped exemptions.)

"There is nothing in the *Americans with Disabilities Act*," continues the League, "which

mandates the action taken in this proceeding in the first place; much less anything that would require that the matter be concluded with an inadequate opportunity for public comment and participation."

The FCC has not yet taken any action on the ARRL request; however, as *W5YI* puts it, "The FCC's adoption of new handicapped rules -- in some form or another -- appears to be a foregone conclusion."

MORE HAM NETS

Time UTC	kHz
2230 Daily	ET Net 14160
2330 Thurs-Tues	INDEXA 14236
Daily	2-56 Group 14256
Daily	W7PHO Family Hour 14226.5
Daily	Heard Island DX Assn 14222
Sat & Sun	10 Meter DX Net 28475
0230 Daily	Alaskan Bush Net 14245
0530 Mon-Sat	Heard Island DX Assn 14222
0645 Sat & Sun	40 Meter DX Group 7159
1030 Daily	W2MIG Gathering 14165
1100 Daily	W7PHO Family Hour 14226.5
1200 Sat & Sun	Brazil DX Net 28530
1200 Sat & Sun	Islands on the Air 14260, 21260 & 28460 (All 3 freqs run at the same time!)
1500 Daily	Snooky DX Net 21335
1700 Daily	French DX Net 21170 (This is an SSB net, outside US band limits!)
1800 Daily	W7PHO Family Hour 21345
1800 Daily	Afrikaner DX Net 21355

Pay the Gov: \$1,000.00 Please

Some well-known hams have been receiving Notice of Forfeiture (NOFs) or fines from the FCC. Recipients of the NOFs include Gordon Skul, WB9BCL, of Crete, Illinois; Herbert Schoenbohm, KV4FZ of Christiansted, U.S. Virgin Islands; Richard Eastman, NSFX, of Springdale, Arkansas; and Glenn Baxter, K1MAN of Belgrade Lakes, Maine.

The reason for these levies concern intentional interference and, in the case of K1MAN, broadcasting in violation of Part 97. Each amateur first received a Notice of Apparent Liability (NAL) and wrote a reply to the FCC. All were dismissed by the FCC and the hams ordered to pay up. Baxter says he'll take his fight to the Supreme Court.

DXing Ham Nets

Kevin John Klein of Appleton, Wisconsin, drops us a note

listing nets in the Badger State, direct to you from *Badger State Smoke Signals*. Here they are, along with their frequency, time and manager.

BWN	3984	1200	KC9CJ
BEN	3985	1800	N9IAI
WSBN	3985	2330	K9UTQ
WNN	3723	0000	KA9FVX
WSSN	3645	0030	N9BDL
WIN/E	3662	0100	WB9ICH
WIN/L	3662	0400	W9NGP

For some more help on your DX catches, Rob Gerardi send along a listing (above) of some additional nets which have proved popular.

Jamboree of the Air

Boy Scouts from Troop 73 in Springfield, New Jersey, and their brothers in green, Troop 94 from Hillside, New Jersey, took part in the 33rd annual Jamboree of the Air (pictured). The event was sponsored by the World Bureau of the World Organization of the Scout Movement.

Thousands of ham radio operators around the world invited local scouts to visit their homes and participate in the operation of their "ham" stations. The scouts got a chance to talk with their fellow scouts hundreds or even thousands of miles away.



Jamboree on the Air participants pose in front of the Springfield, NJ, Emergency Management Mobile Command Post.

Bob Berndt's

DX Tips

ALASKA - My friend, John Reisenauer, NL7TB, welcomes SWL reports. John keeps the following schedules: 7120 kHz CW Tuesdays, Thursdays and Saturdays 0500 UTC; 21120 kHz CW Tuesdays, Thursdays and Saturdays at 0330 UTC; 28495 kHz SSB he meets VY1AU (located in the Yukon Territory of Canada) daily at 2200 UTC. John's Callbook address is not correct; QSL to: John Reisenauer, 1961 Norene St., Anchorage, AK 99508.

AUSTRALIA - VK4AAU says that he appears on 28395 kHz most days at 2330 UTC. QSL to: B.C. Clark, Box 862, Bundaberg 4670, Queensland, Australia. You can also find several Australian stations, when propagation to that part of the world is good, each morning on 3799 kHz, starting at 1000 UTC.

CHINA - Joining the Caribbean-Asian 40 meter net on 7088 kHz 1030-1200 UTC daily, has been BZ4WNG (QSL to: Amateur Radio Station of Nanjing Institute of Technology, P.O. Box 1827, Nanjing, People's Republic of China) among hams from South-Central America and the rest of Asia.

GUANTANAMO BAY - Amateurs here use the KG4 prefix, which the FCC has also assigned to the U.S. fourth call area. This can be confusing, but to ease that confusion, remember that stations in Guantanamo are the ones with the 2 x 2 callsigns. That is like KG4TG, who can be found on 28400 to 28500 kHz every Saturday starting at 1800 UTC. If you hear a KG4 callsign with three-letter suffix, it is in the U.S.

LEBANON - OD5SK is on 10 meter RTTY starting at 1530 UTC most days. QSL to: Sumir, P.O. Box 180, Tripoli, Lebanon.

NAMIBIA - Look on 15 meter RTTY frequencies for V5IP at 1630 UTC most days. QSL to: P.O. Box 9080, Windhoek, Namibia.

REUNION - FR5DX operating from this rare island can be found on 28495 kHz daily at 1815 UTC.

SAN FELIX IS - It has been a looonnnggg time since anyone has operated from this militarily-controlled Chilean island. Now John Torres, CE0ZAM, a member of the Chilean military, has been assigned to the

garrison here at least 'til April. John unfortunately speaks little English, so he will spend his time on the various DX nets. Check, particularly, 14256, 14222, 14226.5 and 21335, to mention a few frequencies. XQ0X will be John's callsign and all QSL requests should be sent to: CE3ESS, Mickey Gelerstein, P.O. Box 9834, Santiago, Chile.

SAUDI ARABIA - U.S. hams can NOT run "phone patches" for military forces here. No "third party" agreement exists between the U.S. and Saudi Arabia (A third party agreement allows you to pass messages or allows you to allow someone to communicate directly via your radio equipment to another).

SOUTH AFRICA - The new basic license for amateurs here grants the use of the special prefix of "ZU" and restriction to the following transmitting limitations: 5 watts maximum on CW and 20 watts maximum on SSB. On the following frequencies and modes: 1810-1850 kHz SSB and CW, 2565-3800 kHz CW, 10130-10140 kHz CW, 21100-21149 kHz, 28100-28149 kHz CW, 28255-28300 kHz, and 28300-28500 kHz SSB and CW.

TADZHIKISTAN - Look for UJ8KA daily on or around 14190 kHz at 0200 UTC. QSL to: Vlad, P.O. Box 64, K. Tyube, Tadzhik 735140, USSR.

TURKMENISTAN - UH8EA has been appearing almost daily on 28480 kHz at 1200 UTC and moving to 14190 kHz an hour later. He is back on 14190 kHz at 0200 UTC looking for contacts. Send your QSL requests to his U.S. QSL manager W5BWA, Huey A. Miller, 5812 Hiawatha Drive, Alexandria, LA 71301.

UZBEKISTAN - This Soviet republic can easily be logged by those who can check the DX net on 21335 kHz, at 1600 UTC daily, where UI8ZAA is available for contacts. He also has a U.S. QSL manager, and reports should go to: K9FD, Mervyn D. Schweigert, Rt 2 Box 138-A, Red Bud, IL 62278. (AND, don't forget when sending reports to include a self-addressed, stamped envelope for return postage or a self-addressed envelope with IRC's.)

WARC Reps

Two former FCC officials will head up the United States negotiating team at WARC-92. (See last month's ham column.) They are Bradley Holmes and Michael Fitch. Presidential appointee Holmes holds ambassador status. Fitch, a previous Private Radio Bureau Chief, reports to Holmes.

Quite a Deal

Interested in making a killing in ham radio? You won't do it by giving tests to amateurs. The FCC announced recently that the maximum allowable reimbursement fee for an amateur operator license examination fee will be \$5.27. Discouraged? Don't be. It's an increase of 6.2% over last year and just \$1.27 over 1984.

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1991

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AIRCRAFT TRAFFIC

Sydney, Australia-VOLMET, 11387 kHz. Full data QSL card verified by W.E. Hanny. Also received a personal letter and weather reporting information. Received in 25 days for an English utility report and one IRC. Station address: FSC. B 237, P.O. Box 211, Mascot, NSW, 2020 Australia. (Robert PlumLee, San Bernardino, CA)

Singapore-VOLMET, 11387 kHz. Full data QSL card, verified by Koo Hock Chong. Received in 29 days for an English utility report, one IRC and a souvenir postcard. Station address: Meteorological Service Singapore, P.O. Box 8, Singapore Changi Airport, Singapore 9181, Republic of Singapore. (Robert PlumLee, San Bernardino, CA)

MAC 60159, USAF C-141B Starlifter, 11246 kHz. Full data prepared QSL card, and color photo. Verified by Glen E. Bach, DO Executive. Received in 11 days for an English utility report and U.S. mint postage. Unit address: c/o 63rd MAW, Norton AFB, CA 92409. (Patrick O'Connor, Hinsdale, NJ)

AUSTRIA

Radio Austria International, 9875 kHz. Full data QSL letter, with illegible signature. Received in 69 days for an English report. Station address: A-1136 Vienna, Austria (Nicholas Adams, Newark, NJ) (Sam Wright, Biloxi, MS) (Frank Hillton, Charleston, SC)

BENIN

ORT du Benin, 4870 kHz. Full data station logo card, without verification signer. Received in seven months after one French follow-up report. Station address: Office de Radiodiffusion et TV de Benin, Boite Postal 366, Cotonou, Republique Populaire du Benin. (Robert Landau, Secaucus, NJ)

IRELAND

Pirate: Radio Stella International, 6320 kHz. Full data paper QSL, verified by Jock Wilson, station manager. Received in 73 days for an English report and one U.S. dollar. Mailing address: RSI, 23 South Beechwood, Edinburgh 12, Scotland. (Robert Landau, Secaucus, NJ)

MALAYSIA

Radio Four, 7295 kHz. Full data letter, verified by Santokh Gill. Received in 33 days for an English report and one US dollar. Station address: P.O. Box 11272, Kuala Lumpur 50740, Malaysia (Bob Combs, Campbell, CA)

MAURITANIA

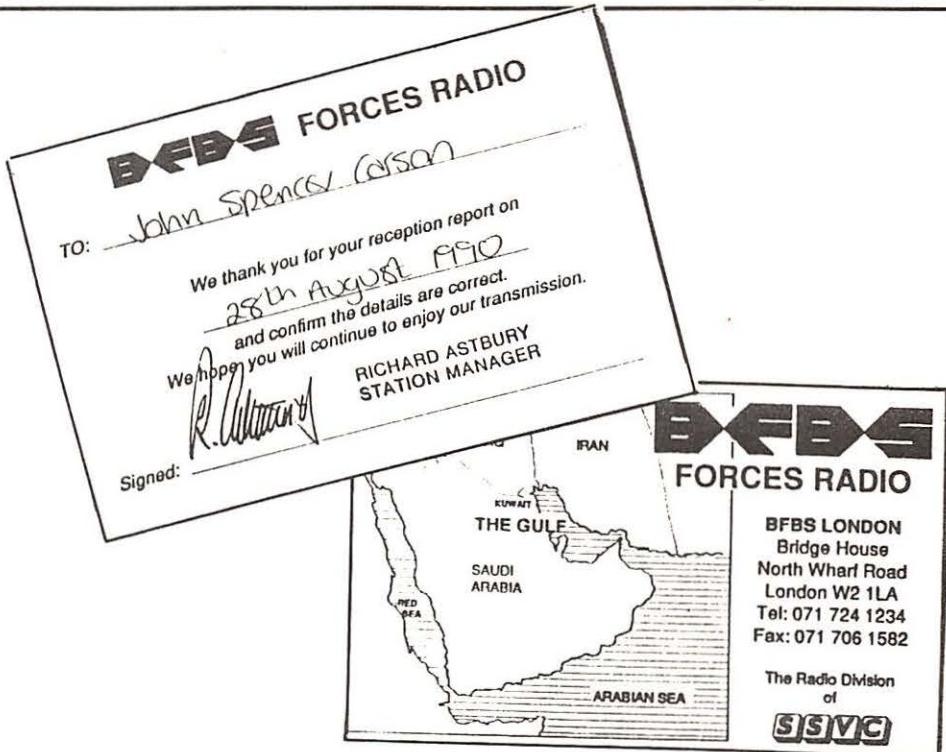
Office de Radio TV de Mauritanie, 4845 kHz. Partial data logo/antenna card, without verification signer. Received in four months after one French follow-up report. Station address: Boite Postal 200, Nouakchott, Mauritania, Africa. (Robert Landau, Secaucus, NJ)

NIGERIA

Voice of Nigeria, 7255 kHz. Full data QSL card, without a verification signer. Received in two years for an English report and one US dollar. Station address: PMB 12504, Ikejyi, Lagos, Nigeria, Africa (Bob Combs, Campbell, CA)

NORWAY

Radio Norway International, 15165 kHz. Full data QSL card of glass designs, with illegible signature. Received in 60 days for an English report. Station



in 90 days for an English utility report and one IRC. Ship address: Exxon International Company, 200 Park Avenue, Forham Park, NJ 07932 (Patrick O'Conor, Hinsdale, NH)

SOLOMON ISLANDS

Solomon Islands Broadcasting Corporation, 9545 kHz. Full data station logo card with illegible signature. Received in 43/151 days for an English report and one US dollar plus three IRCS. Station address: P.O. Box 654, Honiara, Solomon Islands. (Robert Landau, Secaucus, NJ) (Darren White, Columbia, MS)

SOUTH AFRICA

Radio RSA, 7270 kHz. Full data scenery card of Table Mountain, without verification signer. Received in 38 days for an English report. Station address: P.O. Box 91313, Auckland Park, 2006, South Africa (Robert Landau, Secaucus, NJ)

UNITED KINGDOM

British Forces Broadcasting Service-London, 13745 kHz. Partial data "The Gulf" QSL card, with illegible signature. Received in 14 days for an English report and three IRCS. Station address: BFBS London, Bridge House, N. Wharf Road, London W2 1LA, United Kingdom. (Darren White, Columbia, MS)

UNITED STATES

WGEE-Greenbay, Wisconsin 1360 AM. Partial data letter, verified by Duke E. Wright, general manager. Also received a coverage map and information sheet. Received in seven days for an English AM report and a self-addressed envelope. Station address: 115 S. Jefferson Street, P.O. Box 1991, Green Bay, Wisconsin 54305. (Harold Frogge, Midland, MI)

WSNX-Muskegon, Michigan, 1600 AM. Partial data verification on station letterhead, and station sticker, verified by Haz Montana, program director. Received in 14 days for an English AM report and a self-addressed envelope. Station address: 875 East Summit Avenue, 49444, Muskegon, MI 616-733-2126 (FAX) 616-739-9037 (Harold Frogge, Midland, MI)

USCG COMSTA New Orleans, Louisiana NMG, 5320 kHz. Full data station QSL card, verified by RM1 Charles H. Otnott III, and personal letter. Received in 15 days for an English utility report. Station address: P.O. Box 520, Belle Chasse, Louisiana 70037-0520. (Russ Hill, Oak Park, MI)

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Cleaning Out the Shack

Every New Year, the One-Eyed Monster (television) is bombarded with a deluge of nostalgic programming. In spite of my efforts to avoid these monotonous distractions, I usually fall into the trap and find myself reminiscing about the good old days -- the good old days of RTTY.

I remember the days of the clanking sound and the old model 15's rhythmic pounding of the hammers while UPI wire news service on 7.345 brought the latest news updates. I also remember the greasy hands and the oil stained shirt while I repaired the broken carriage return spring. I'll never forget the time my shirt sleeve got stuck in the worm drive on the model 15 keyboard.

Well, those days are gone, thank God. But I just can't understand why they called them "the good old days." I guess people had a death wish working with all that high voltage and mechanisms that can grind your hand into hamburger. I'd rather mess with microchips that require a whopping six volts at 2 milliamperes and no gears.

I always like to look into the future and speculate what the hobby will be like 10 years from now. Ten years ago I never thought that I'd own an M-7000 or an R-71 or other such high-tech equipment. I didn't think I would be typing on a computer or use it to copy RTTY or decode exotic modes such as piccolo. I didn't even imagine that I would be writing for *Monitoring Times*.

I hope that, in the next 10 years the hobby will stay alive and that there will be enthusiasts like you that will keep on reading

my column and tuning in that exotic or rare RTTY DX. Maybe some new gadget will be available and we'll be able to copy some of the new modes that I talked about this past year.

If you haven't made your New Year's resolution, here's a suggestion. How about cleaning out the listening post? Every time I start the project, I usually end up tossing a few old 20 percent resistors or some burnt out tubes. I guess I'm a pack rat. If you have the same problem, printed here is a guideline to follow. It helped me.

Items under "T" column should be tossed. "S" means sell at a hamfest. "F" means mark it free and give it away at a hamfest. Let someone else figure out what to do with it. "K" means keep it. It may be worth something someday or you may need it for the next homebrew project.

You are probably wondering why the Teletype Model 15 appeared under all four categories. I can't figure out what to do with it, can you? Some TTYs with DC motors had tuning forks to adjust the speed. You should keep the fork because if you sharpen the ends and attach it to a stick, you can use it to spear frogs. Toss the XYL's magazines when she's not looking. She'll never miss them and what are they doing in the shack anyway.

TTY paper roller cranks are in big demand at hamfests and if you are a ham you should save the knife switches especially if they are a ceramic type. They make great antenna switches if you are using ladder line. The 92 ohm coax should probably be under



A shot of me in the "good old days" (?) connecting a power cable to a comm shelter in Korea.

the toss category. I tried to give it away at hamfests for several years with no luck.

Correction

In last November's issue I displayed a block diagram of a DSP system. The ADC and DAC were switched. I hope this didn't add to the confusion. That month's column was a little on the heavy side.

RTTY in Arabic

Has anyone copied the RTTY on 10.235 and 10.236? They appear to be using 75/75R and both frequencies are sending the same data. It can be a frequency diversity system and it's sending data using Arabic text which was mumbo jumbo because the M-7000 can't do Arabic. I was getting normal spaces, carriage returns and line feeds. At the end of the message there was plain text which said, "This concludes Arabic file at this time."

They went to a mark for several minutes and then switched to a higher data rate or even crypto covered because the M-7000 wouldn't sync up. They went off the air at 0545 UTC. I never copied the call letters but maybe I will by the time this column goes to print.

Happy New Year and thanks for another great year.

NNN

SORTING GUIDE FOR ACCUMULATED RADIO "STUFF"

T	S	F	K
Model 15 TTY	Model 15 TTY	Model 15 TTY	Model 15 TTY
broken tubes	new tubes	used tubes	very old tubes
broken resistors	very big resistors	used resistors	new resistors
nude rtty pictures	TTY paper	TASS printouts	UPI headlines
broken knobs	toggle switches	knife switches	mini switches
short wire	coax	92 ohm coax	red and black wire
paper capacitors	HV capacitors	300v 1uF caps	computer grade caps
broken TTY parts	TTY paper crank	TTY parts	TTY tuning fork
tube-type TUs	used ST6	homebrew TU	Fredericks 1206
XYL's magazines	old QSTs	Pop Comm	<i>Monitoring Times</i>

DBS Scramble

The scrambling situation has reached new depths of murkiness with the entry of all the new direct broadcast satellite (DBS) ventures slated to start up. Many will offer their own encryption methods. TVN on Telstar 303 is running the Leitch system, PrineStar plans to use Scientific-Atlanta's BMAC system; Sky Cable and the other half dozen corporate entities who have announced plans for similar ventures will all be using different scrambling schemes. Is this a problem? Actually, no.

In the first place, all these ventures will be duplicating each other. Each will make separate carriage agreements with the basic cable programmers to carry their services. They will also negotiate agreements with the Hollywood studios for film rights. And you can bet they'll all carry all your favorite old TV sitcoms. There'll be nothing on any of these channels that you can't see elsewhere.

In the second place, virtually all these DBS operators are planning to use video compression technology for delivery of their signal. This is a technical method of squeezing anywhere from a few to tens of TV channels onto one transponder. Using custom designed receiving equipment with proprietary software will make it impossible to receive these signals on current TVRO receivers.

BlackCipher

Now comes word of a Canadian firm which is said to be manufacturing a stand-alone descrambler called Liberty One. Dubbed BlackCipher by those in the TVRO industry, the unit is made entirely of parts originating in their own plant and not at General Instrument (the maker of the industry defacto standard VideoCipherII). According to a report in a recent *Satellite Retailer* magazine, "...the unit appears to switch on faster and has more menus than VCII." Not only does it appear to descramble VCII but Oak Orion signals as well.

Is this the end of VCII? Should we dump all our shares in Forstmann Little (GI's corporate parent)? Well, not quite yet. It's certain that within the next 12 months all existing services using VCII encryption will be switched to VCII Plus which to date has not been affected by hackers, nor is it clear yet that it will be affected by BlackCipher. It will, if nothing else, give programmers a sense of security.

QUICK NOTES

Word has it that SkyCable and British Satellite Broadcasting will merge to form one company. It'll be interesting to see who wins. Both have struggled financially with their respective efforts and there has been little

love lost between the two.

One source for liquidated, close out and hard to find old satellite TV equipment is Long's Electronics. Normally a distributor to satellite dealers, they may sell to individuals. Call them and ask for their latest catalog. Call: 800-633-4984.

It appears that Keith Lamonica, of defunct FM America fame has returned to satellite via Spacenet 3 channel 5 6.8 audio. Look for him Sunday evenings at 9 p.m. ET.

Sears Roebuck and Co. are getting into the home dish market in a big way. A full page ad in a recent trade journal was soliciting dealers to install Sears satellite TV systems. If you're a dealer and missed these ads, you may want to contact them for more details. This could be an excellent supplement to your current sales efforts. They want a brief description of your company and the market area in which you have an interest. Write: Satellite TV Product Manager, Sears Roebuck and Co., Dept. D/610-BSC 20-17, Sears Tower, Chicago, IL 60684.

MAILBAG

Rob Cave, of Princeton, Texas, wants to know if scanners (particularly AOR handhelds and full sized ones) are suitable for SCPC/FM listening. He would also like to know about LNB oscillator drift.

He also comments on the new satellite power, lower noise temperature LNBs and better noise threshold receivers as being a reason for smaller dish diameters doing a reasonable job at reception. His concern is that two degree spacing will cause problems for smaller dishes.

Finally, he's amazed that people "...pay good money for a descrambler, pay outrageous subscription fees, and then watch commercials... I thought one reason for a TVRO earth station was to get away from commercials..."

Scanning SCPC

The good news is that scanners of just about any description will receive SCPC/FM signals. The debate is whether they do as good a job as an actual SCPC receiver or even as good as the old reliable Portavision 40 (which at \$40 from your local Radio Shack has got to be the cheapest way to get into SCPC).

Some scanners will be less useful than others as they may not have the selectivity, band width, or fidelity that makes SCPC enjoyable. But that may not matter to a lot of people. Since experimentation is the fun part of this hobby, try different combinations and see which you enjoy.

Keep these pointers in mind: If you are

planning to use a scanner which tunes the 950-1450 MHz of your LNB, be aware that most LNB cables also carry DC power from the receiver to the LNB. If you use a splitter to divide the signal, make sure to use a 950-1450 MHz splitter and be sure it has a DC block to prevent the DC from getting into your scanner: if not, you will surely smoke it. If the splitter does not have a DC block, a separate one from Radio Shack may be inserted into that leg of the splitter.

If you have a satellite receiver with a 70 MHz loop on the back, you may plug a scanner which tunes 18 MHz on either side of that IF to receive the SCPC channels. Likewise, if your satellite receiver has any other frequency IF loop on the back, your scanner will have to be able to tune those frequencies.

LNA/LNB Downconversion

The electronic components of an LNB are designed to do the job of amplifying the microwave signal with the lowest amount of noise possible. The LNA part of the unit sits atop the feedhorn on your dish.

The signal received is in the three GHz range (for C-band) or 12 GHz range for Ku band). These frequencies don't travel very well on 75 ohm coaxial cable so the frequencies are converted downward to the 950-1450 MHz range in a block which will travel handily on the cable. That's the Block Downconversion of the same unit.

Remember that all this sophisticated electronics is sitting out there at the dish in the Texas heat and the Michigan cold and is expected to give you perfect pictures year round. At about \$100 each, these new low temperature LNBs can truly be called electronic marvels. They do exactly what they were designed to do: deliver an apparently drift free picture.

Actually there is some drift but it won't be noticed on the video because these transmissions are of a very wide band nature. The narrower one attempts to tune the signal the more apparent the drift will be. A difference between daytime temperatures and night temperatures, summer and winter, will all affect your SCPC receiver's ability to stay on frequency.

Commercial installations use half inch "hardline" from the feed horn to the LNB which is inside a temperature controlled building. They also use SCPC dedicated receivers which are many times more sensitive than scanners. In addition, they use dedicated SCPC receivers which are many times more sensitive than scanners and incorporate high fidelity amplifiers which are unnecessary in scanners.



"With the advent of better equipment, are large dishes a thing of the past?," one reader wants to know.

Photo by
Mark Swarbrick

In short, you may experience some shortcomings using a scanner in SCPC but it should work fairly well. W0SED, a ham who checks into the TVRO net regularly, reports excellent results using his Realistic Pro 2004 scanner for SCPC listening.

The great spacing debate

While it's true that a new generation of satellites will bring with them the prospect of higher power, and therefore make it possible that smaller C band dishes can be used, these birds are still a year from being launched. In the meantime, the older birds have a few more years of life in them. The upshot is that there is still no substitute for as big a receiving antenna as you can afford regardless of the satellite's power. Lower noise temperature LNBs and better noise threshold receivers are not substitutes for larger diameter reflectors.

As to satellite spacing, the jury is still out. Original FCC plans called for shifting all satellites to a spacing of two degrees between birds. This makes satellite manufacturers happy as more birds can be squeezed into the Clarke Belt. However, the dish manufacturers are upset because they think they might miss an opportunity to make a lot of money by hyping the smaller dishes which can pick up the higher power birds with great signals.

The problem is that the smaller dishes have difficulty distinguishing signals from immediately adjacent satellites which manifests itself with interference on desired channels. Both camps will be lobbying the commission vigorously for their own purposes with an announcement to be made this year.

Who wants a dish anyway?

Watching commercial free TV is one reason for having a TVRO system. The fact is that there are 30 noncommercial channels which may be seen. Many of these are available on a subscription basis and many are not. Without my dish I can receive one commercial free station which is 50 miles away. To do so I have to use a very large terrestrial antenna on a rotor with an amplifier.

But that's really the least of it. Many dish owners don't even have VCIIs, have no interest in the video. Instead their main interest is in the audio activity on subcarrier and SCPC. Then, of course, there's Videotext, X*Press X*Change, the computer wire service, the many news and special event feeds, NASA Select, foreign broadcasts and more.

Regardless of subscription fees (and I pay less for more services than any of the cable folks do in my area), the home satellite TV system remains the best buy in communications and entertainment today.

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New Satellites

Clark Rennie of Los Angeles, California, wants to know what new satellites are going up, when and where they will be parked.

Launched 10-12-90, Hughes SBS 6 (Ku) 99 degrees west. Look for SkyPix, a DBS service on all odd transponders 1-19. Should be up and running by first quarter of this year. Launched 10-12-90 Hughes Galaxy 6 (C) 91 degrees W. Has ID channel on transponder 15 and will be used for sports events, news and network feeds. Satcom's C-1 was a spare satellite which was pressed into service late November 1990 to take over F1R at 139 degrees West. F1R was launched in April 1983 and had a fuel capacity of 8.5 years. C-1 is virtually identical except that it has been rebuilt with polarization switching for each channel which can be commanded from earth. COMSAT SBS 2 (Ku) moves to 97 degrees West where it became operational December 13, 1990.

PrimeStar, the DBS service on GE K1 (Ku) 85 degrees W. began on 12-1-90 using transponders 2, 3, 4 (test channel), 6, 8, 10, 11, 12, 13 and 16. Satcom's Aurora 2 (also known as C-5) is to be launched in May of this year to replace Aurora 1 at 143 degrees W. Hughes Galaxy 5 which is slated to be launched late this year will replace Westar 5 and move to 125 degrees W. It will be the first of the 16 watt birds. Hughes Galaxy 1R will be launched one year from now to replace G1 and rest at 133 degrees W. Satcom C4 will launch October 1992 and replace F4 at 135 degrees W and Satcom C3 will launch December 1991 to replace F3R and reside at 131 degrees W. All of these events assume nothing goes wrong and everything goes right.

Many thanks to Charlie Edmunds, KK4VC, of Orlando, Florida, for encouraging words. To David Parsons of Tucson, Arizona, for an interesting article on the Mormon Church's use of satellite TV to promote their football team at BYU nationally.

CFOB: A new definition of "Air Mail"

In the bush country of Northwestern Ontario winter is fierce. Thermometers often dip to 40 below zero. As a result, civilization barely penetrates the woods that surround Rainy Lake. There are few roads. Electricity is considered a luxury. There are no telephones. There is no mail delivery.

The fact is that there is only one way to communicate with the people of the North Woods: CFOB. Three times a day, the station broadcasts messages to listeners throughout the Rainy River District. And everybody listens.

"Mom and Dad on Big Pine Lake: Charlie went into the hospital for his operation and he'll have that tomorrow. We'll send you another message on Monday and let you know how he made out. Love, Mary."

Mail constantly pours into the CFOB studios, located in the small town of Fort Frances, just a stone's throw from the American border. Letters describing rites of passage, requests from neighbors and friends, news of family events, and some that are quizzically cryptic, are read over the air for free at 6:35 a.m., 12:05 p.m. and 4:55 p.m. daily. All that is said travels through the ether. The sender has no way of knowing whether a message has been received and the receiver has no way to reply. Still, the system has become essential.

The town of Fort Frances, where CFOB is located, is located just 600 yards from the U.S.-Canadian border. "It's your typical town of 9,000. It has a nice downtown, situated right on the Rainy River. It's a very nice clear river flowing out Rainy Lake, just a mile out of town. The basic industry is a pulp and paper mill which employs about 850 people."

People also come to Fort Frances to hunt and fish but more and more, the reason for coming is sightseeing and family recreation. "Our second biggest industry here is tourism," says Gordon.

Although CFOB operates with only 1,000 watts, 24 hours a day, its low frequency of 640 kHz aids its signal to penetrate the most resolute woods. "The station has been around since 1944 when it was determined that there was a need for a radio service in this area," remembers Gordon McBride, CFOB station manager. "It came into use because of necessity and it grew because of demand."

CFOB serves the community throughout the week. "We are an adult contemporary station, music-wise, and very community oriented and local in our news coverage. We make sure that we're very heavily involved into whatever's happening as a community. We are attending as many events as possible, and doing broadcasts from them, reporting on them, and doing interviews with the people involved with them."

"Each Wednesday morning, from 9:05 to 10 a.m., we have our open line show called 'Talkback.' We take phone calls from the community about whatever they want to talk about: parking, politics, abortion, garbage pickup, and dogs running loose."

"We are a group of nine radio stations all commonly owned by Fawcett Broadcasting Limited. Each station is operated independently." The Fawcett stations cover the entire Northwestern Ontario region and parts of Minnesota via CJRL, 1220 kHz, in Kenora; CKDR, 800 kHz, in Dryden; CFOB; and six satellite transmitters, all on the AM band.

Each station is independently operated, but all carry adult contemporary music personally prepared by owner Howard Fawcett. Tapes of this distinct music mix are distributed to all nine stations for future playback.

Fawcett's pre-recorded music started by necessity. McBride explains: "When you hire young ambitious announcers, they are going to play the kind of music that they think people want to hear. The music is all over the place and there's no consistency to it. We lay down the music and that takes care of the problem."

More uptempo tunes are played at night as CFOB's audience changes from adult to a younger crowd. After midnight, the station relies on an automation system that plays music and announcements from prerecorded tapes. Mornings on CFOB are dominated by news and information.

"Our news is a combination of local coverage done by our newsman, plus we pick up a wire service called Standard Broadcast News. We're very well used commercially by business people in the area. We have some national accounts, but about 85 percent are local accounts. We also have a number of Minnesotan advertisers, and a great, great deal of Minnesota people listen to our station. The station is not totally unlike what you'd find in a U.S. city this size."

Since 1951, Gordon McBride has been a part of CFOB and his experience shows. Born in Winnipeg, Manitoba, he started his career as a rookie announcer and worked his way up to station manager. Gordon has combined a policy of community service, in the public interest, with a very successful commercial



Darcy Neufeld is one of the young announcers getting his start at CFOB's unique radio station.

operation. CFOB has become the lifeblood of a beautiful and remote part of the world.

Bits 'n' pieces

■ The AM band is about to expand to 1700 kHz. WXTZ in Indianapolis, Indiana, now operating on 1430 kHz, may be the first station to move up in frequency. The change would produce dramatic results to the stations remaining on 1430 kHz, a crowded local channel. The nighttime coverage of WFOB in Fostoria, Ohio, would be allowed to increase almost 300 percent.

Stations placed all over the country would improve their signals, including distant KFNI in Fresno, California. Adding 10 new frequencies to the top of the AM band will ease congestion and interference, and create amazing mediumwave DX opportunities for *MT* readers nationwide.

■ *Habla Espanol?* Here's some great news if you like baseball. The newly formed CBS Hispanic Radio Network will broadcast select major league baseball games this year in Spanish to stations in the United States and Latin America. Billy Berroa, Gustavo Lopez Moreno, Jaime Jarrin, and Edgar Perea have been chosen as the play by play men for the coverage, with Armando Talavera doing interviews throughout each game.

If you like music, tune in this month to Radio Vision International, another newly-formed global radio net. RVI will be covering "Rock In Rio 2" live from Brazil. The 10 day event will feature George Michael, INXS, Guns 'N' Roses, Billy Idol, David Lee Roth and Lisa Stansfield. Over 500 million people will hear the concert worldwide starting January 18.

Mailbag

■ Who owns "The Night Hawk?" A 6,000,000 dollar lawsuit may decide. Sacramento, California, radio rivals KWOD and KROY have declared war over disk jockey Pat Garrett. As "The Night Hawk," Pat achieved quite a following with KWOD's contemporary hit format, but KWOD now claims he's also an industrial spy and is suing for damages. One day Garrett walked over to the KROY studios and applied for a job and was hired. He was on the air for 10 days before KWOD General Manager Ed Stoltz caught on.

Although Garrett had been taken off the air at KWOD, Stoltz claimed that he was still under contract and had been hired by KROY to reveal KWOD's success secrets. After the suit was filed, KROY pulled Garrett off the air. "The guy walks over and says he wants a job. We give him a job. Someone tells us he's under contract so we pull him off the air, and they file a lawsuit. Sounds frivolous to me," said KROY attorney Joseph Gensleia.

Garrett is the loser until the litigation can be settled. He is off the air everywhere. Will "The Night Hawk" fly again? Stay tuned. Reader Mike Westdal sent in this caper.

■ Mary Chapin Carpenter of Bethesda, Maryland, tells us that The Sound of the Wind, KFMU FM in Steamboat Springs, Colorado, lives up to its name. Using a windmill, and a backup diesel generator, the station has been independent from traditional power sources for over 15 years. KFMU has just upgraded its power plant to include a 720 watt solar power generating system. When the system's storage batteries are fully charged, the station can stay on the air for three and a half days without any wind or sun.

New station grants

Here's where the latest additions to the broadcast world will be appearing: Holbrook, AZ, 92.1; Marianna, FL, 93.3; Carterville, IL, 95.1; Herrin, IL, 92.7; Augusta, KS, 104.5; London, KY, 92.5; Paris, KY, 1440; Pocomoke City, MD, 106.5; Granite Falls, MN, 93.9; Meridian, MS, 102.1; Canandaigua, NY, 88.9; Honeoye Falls, NY, 107.3; St. Joseph, TN, 101.5; and Beaumont, TX, 102.5. Courtesy of the *M Street Journal*.

For Sale

Want to move to Tahiti? Would you settle for Pago Pago? A radio construction permit is being offered for a 50,000 watt full-time AM radio station on 585 kHz in American Samoa. When the station goes on the air it will serve

over a million English speaking people in the South Pacific. You'll have listeners in Tonga, Fiji, Western and American Samoa, and places beyond. Call Bill Kitchen of Beacon Broadcasting at 303-786-8111 today and don't forget your grass skirt.

A small market AM and FM combo operation is available near the Gulf Coast area of Texas for \$450,000. It should be easy to turn a profit because the market has very limited competition. This area will experience high growth since two major businesses are about to move in. Contact Charles Goyette at 602-992-7242.

Are you an alumni of Ball State University? You'd love to own this one. A 250 watt AM on 990 kHz and an FM sister station ready for an upgrade to six kilowatts is waiting in Muncie, Indiana.

The current owners are willing to finance part of your venture and real estate is included. Call Ed Roehling or Walter Swain at 317-889-1025.

International bandscan

■ Belgium's BRT International has begun broadcasts in English on 1512 kHz. Look for their half hour daily broadcasts at 0730, 1000, 1400, 1830, and 2200 UTC. ■ Radio Botswana has a brand new mediumwave transmitter on 648 kHz and has extended its hours of broadcasting to 0300 to 2100 UTC. ■ Asian listeners are reporting Radio Beijing, China, is operating daily in English on 1341 kHz for two hours beginning at 1200 UTC. ■ Utvarp Foroya, the broadcasting service of the Faeroe Islands, has been heard in English for the first time. ■ A weather bulletin, for seafarers between Scotland and Iceland, can be received daily at 0800 UTC on 531 kHz. ■ Radio Studio X, a new private commercial Italian broadcaster, is now operating with 700 watts on 1584 kHz. RSX hopes to eventually increase their power to 10 kilowatts. ■ Asian listeners should look for Radio Yuzhno-Sakalinsk broadcasting from the U.S.S.R. near the northern tip of Japan. They have been heard at 1929 to 2100 and 0115 to 0200 UTC, Monday through Friday, on 972 kHz.

Credits

Many thanks to reader Gary Heinonen for his introduction to Gordon McBride and CFOB, Ft. Frances. *Radio World, Broadcasting, The Minneapolis Star Tribune*, The British DX Club, and the *M Street Journal* provided additional information. Have a very happy new year and happy trails.

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RADIO TESTS

As of deadline, we have two Special Tests on the AM band. Both tests were arranged by the National Radio Club. If you'd like more information on the National Radio Club and BCB DXing please send \$1.00 to the National Radio Club, P.O. Box 118, Poquonock, CT 06065.

KFEL-970, 4411 Goodnight Ave., Pueblo, CO 81005 will be testing Monday morning January 14, 1991, between 0200-0230 Eastern Standard Time. This test will include Morse Code ID's. Our thanks to Mr. Mike Landry, Operations Manager.

KSOK-1280, Box 917, Arkansas City, KS 67005 will be testing on Sunday morning February 3, 1991, between 0500-0600 Eastern Standard Time. This test will include Morse Code ID's. Our thanks to Mr. David C. Foster (N0KAT) Chief Engineer.

Look for more tests in February and March issues of *Monitoring Times*. 73 Jeff Tynan & Wayne Heinen for the Colorado CPC Machine.



The Death of the Comandante

Comandante David is one of the giants of clandestine broadcasting.

Broadcasting from somewhere in the southern United States, his fiery broadcasts inspired acts of sabotage and violence in Cuba. So powerful was his oratory that it was said to be the spark that set off the Mariel boatlift which brought thousands of Cubans to this country. According to some reports, more Cubans listened to Comandante David than to any other broadcaster.

Although little is known about the man, the Comandante was supposedly very close to Castro when he rode victorious into Habana but later broke with him as it became obvious Castro was going to follow a Marxist path. Once in the United States, Comandante David was determined to spread the word to the people he left behind and Radio Libertad Cubana was soon born.

Eventually, under pressure from the Cuban government, the FCC shut down RLC. According to FCC records, a "Jose Gonzalez"

was cited as the operator. Senor Gonzalez was even convicted of operating an illegal station and given a severe fine. However, it is well known in Miami's Latin circles that the Comandante and Jose Gonzalez were two different people.

Even after the Gonzalez affair, the Comandante would still fire up his transmitter from time to time, inspiring his audience as only he could. The last time he took to the airwaves appears to have been in the spring and summer of 1988 when he added yet another enigma by identifying as both Radio Libertad Cubana and Radio Felipe de La Cruz (Philip of the Cross).

After that last broadcast, we began hearing rumors that the Comandante would broadcast no more. The rumors turned out to be true. Comandante David died of cancer sometime during 1989.

Vaya con Dios, Comandante David. Here is one Anglo who will never forget you.

Let the Games Begin

For the most part, pirate radio operators seem to get along pretty well. If you listen to the usual pirate frequencies, from time to time you will even hear the operator of one station talking with the operator of another. As with any other pursuit, however, there are rivalries. One of the most active is between pirates in the New York metropolitan area.

As you may remember, *Monitoring Times* broke the story of Radio New York International's recent leap from "pirate" to "former pirate" when the group bought airtime on WWCR's 100,000 watt frequency. Not to be outdone, another group has also purchased time on WWCR. This group calls itself Radio Free New York and appears to include persons who were once associated with pirates WHOT, WFAT and possibly others. They seem determined to challenge the bold, innovative approach which saw Radio New York International go legal and around the world on WWCR's 100,000 watts.

Some pirate rivalries are friendly. At least one has spawned acts of genuine violence. However, if there must be a "pirate war," then this is the best way to fight it out. Even ace FCC pirate buster Judah Mansbach can sit back, listen, and enjoy this one. The rest of us should benefit through quality programming as RNI and RFNY compete for the loyalty of listeners. So there you have it. Now let the games begin.

You can follow along by tuning in to WWCR this weekend. Changes can, of course, occur but the schedule for Radio Free New York is UTC Sundays (Saturday EST) from 0400 to 0700 UTC. Then the next night check out Radio Newyork International on the same frequency of 7520 UTC Mondays from 0200 to 0100.

Doylestown, UAE

A special Outer Limits Thank You to Leslie Edwards of Doylestown, Pennsylvania.

If you received a copy of *Shalom Rings Hollow* from the Voice of the United Arab Emirates in Abu Dhabi, you have *Monitoring Times* reader, Mrs. Leslie Edwards, to thank.

Several months ago we mentioned that the Voice of the United Arab Emirates was offering free copies of the book, *Shalom Rings Hollow*, to *MT* readers. A number of people took the station up on their offer but received nothing.

Meanwhile, Ahmed Shouly, the Voice of the UAE staff member who had authored the book, wrote to Mrs. Edwards to tell her that



Office Plainvillois De Radiodiffusion

B.P. 274973650001
0284910 Greytown
Peoples' Republic of Plainville

26 July, 1990
Year 16 of the Revolution

Dear Mr. Frith:

Revolutionary greetings from Greytown, free Peoples' Republic of Plainville!

We thank you for your fine report of reception of our external service "The Revolutionary Voice of Plainville." It is partially correct, but we are technically only able to operate "continuous duty" with our 10 kW Collins HT-80 transmitter. Any other operations is impossible.

Thanking you for your letter, I remain.

Henrik Jorgensen
Director of External Service

Albanian Consultant Keld Sorensen
North Korean Consultant Yadoi Okun:

Station Manager: General Ped Xing
Host Commandante John

Borrowing from the legend: Commandante John hosts the Revolutionary Voice of Plainville in this QSL sent by Lew Frith of Maryland.

XERK

FREE BROADCAST RADIO

Tim Johnson

This is to confirm your reception of station

XERK on the border of Mexico on
8-4-91 at 0248 UTC on 7435 kHz

Transmitter: Drake

Power: 60 Watts PEP

Antenna: 1/2 wave inverted V at 40 feet

XERK

La estacion numero una en
la frontera de Tamaulipas, Mexico



*Shut down: Station XERK
QSL from Tim Johnson, IL*

the station was no longer able to send out copies of the book because they did not have sufficient funds to pay for the postage.

Mrs. Edwards then made a donation to cover the cost of mailing the books.

From the FCC's Kingsville, Texas Office

We have received word of a pirate closing. The FCC says that they shut down widely-heard XERK, which has been transmitting on 7435 kHz. Mobile radio direction-finding equipment was used to track it down, and the station operator was fined \$1,000. Since XERK was located in Donna, Texas, not far from the Mexican border, the "X" call sign was rather appropriate, since such calls are used by Mexican broadcasters.

Meanwhile Out There in Radio Land:

"Outer Limits" readers report a wide variety of loggings. Let's take a look at what they are hearing.

Florida's Terry Krueger came across WYMN, with its all-female staff, on 7410 at 0504. The very bizarre (you have got to hear it to believe it) Voice of Bob showed up on 7410 at 0658.

Out in California, Skip Murphy found KUSA Radio Wisconsin on 7415 at 0520 with its very first transmission. Skip heard KMUD on 7435 with its last transmission from California. KMUD's new location will go unmentioned here.

Hardly a month goes by without the (licensed) Voice of WNIS in Norfolk's Pat Murphy sending us a nice bunch of loggings. Pat outdid himself this time with "The Crooked Man." "The Crooked Man" has been around for quite a few years and seems to have graduated from the same broadcasting school as the operator of the "Voice of Bob." When Pat heard him on 7415 at 0248, the Crooked Man was claiming, among other things, to be an FBI agent and that Barbara Bush was in reality Queen Elizabeth. Pat also found a QSO on 7415 involving several stations, including WHDA - We Hate Dead Air.

Of course, we expect to hear from Ohio's Fraser Bonnett, who always has good success at the receiver. Some of his recent catches are KGUN America in USB on 7415 at 0230, the old-timer Pirate Radio New England on 7415 at 2057, and Radio Free North America at 0056 on 7415. Fraser's mail box has also done well with QSLs from WORK, Action Radio, Midnite Radio and clandestine La Voz de la Fundacion via WHRI.

In Wisconsin, Robert Thompson found KNBS on 7411 at 0340. He also received their QSL. Meanwhile Charles Snider in Massachusetts got Radio Wisconsin in USB on 7410 at 0315. Evan Anderson of Indiana also had success with a log of Tube Radio on 7415 at 0434.

Tennessee's John Shonder was busy listening to Radio Outer Limits (which has no connection with this column) on 7414 at 0304, One Voice Radio on 7412 at 0018 with a talk on physical and spiritual well being, and Hope Radio International on 7392 at 0237.

Minnesota's Alan Masyga is another regular to this column. Some of his recent catches include the Canadian Radio Beaver on 7415 at 0108 and WORK on 7418 at 0246.

Fellow Floridian Mark Seiden has done well for himself with Fourth of July Radio in a QSO on 7415 at 0215 and another QSO on 7415 which included KNBS, The Voice of Oz and Rockabilly Radio.

Lew Frith in Maryland found Radio Wolf International howling with its first broadcast on 7415 at 0100. Lew also got a very interesting QSL from the Revolutionary Voice of Plainville.

Connecticut's Jim Kalach had Voice of Oz on 7415 at 0141. He also found WORK on 7415 at 0324.

And yes, yours truly managed to find a few. Radio USA turned up on 7395 at 0159. A QSO on 7415 at 0205 produced Samurai Radio, Voice of Oz, and Radio Free Frank. Canadian CFBN made it in around 0215 on the same frequency.

Some final notes:

One of the more unusual logs to show up

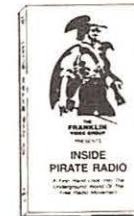
PIRATE RADIO ON VIDEO

INSIDE PIRATE RADIO is a first hand look into the underground world of the growing free radio movement.

In this video, you'll talk to author and Pirate Radio monitoring expert, Andrew Yoder, about when and where to listen, logging, QSL's, drop boxes and more.

Also, sit in the studio and talk with experienced Pirates about why they do it, programming, equipment and more. Then go into the field with them to broadcast!

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here recently comes from David Parsons in Arizona. He has found a station on 8030 transmitting from 0300 to 0400 with no identifications and mostly instrumental music with an occasional English vocal. Once just before the station left the air, he heard a CW burst. This writer has heard it parallel on both frequencies and did once catch a VOA ID on 8000 at 0300. Could it have something to do with the Middle East?

For those of you on the West Coast, Brian Johnson sends an article from a San Diego paper with some potentially interesting catches. Try for Radio Jeannette, whose operator claims to be a transsexual country folk singer, around 7000 kHz. The Voice of Light, with Bible readings and conservative commentary, shows up around 1600 kHz. Radio Big Noise sometimes turns up in the vicinity of 7000.

Finally, from the Netherlands Ary Boender advises us Radio Caroline is back but on the new frequency of 819 kHz and a new location off the coast of Belgium.

Meanwhile, back home we have heard from a source who informs us all recent logs of Radio Confusion are of tapes. The station is not currently active.

The Mysteries of Longwave

Identifying the source of beacons has always been one of the more difficult -- and enjoyable -- chores in longwave listening. One particular beacon has been giving *Monitoring Times* readers headaches since it popped on the air some time ago.

"VA," however, couldn't keep its location a secret for long. Located on 430 kHz, it has been pinpointed as coming from Varadero, Cuba. (For the very fussy, the coordinates are 22-59.3 N and 81-30.6 W.)

There is still a mystery, of sorts, concerning the VA beacon. Does it replace Varadero, Cuba's other widely heard beacon, UVR on 272 kHz, or is this something altogether new? Inquiring minds want to know.

Also remaining on the "most wanted" list is the locations for SAL on 230 kHz, NID on 347 kHz and, what beacon guru Ken Stryker calls "the all time champion," CYV on 526 kHz.

There are those who have their suspicions about SAL. Some people feel that it is located in Central America or the Caribbean. (There is an SAL on 312 kHz that is located in Vina del Mar, Chile. Is this related? See "Lost and Found.") Some seem to think that CYV will ultimately be pinned as coming from the Caribbean as well. NID might be in Ridgecrest, California, profer others, hinting that it might be part of the China Lake Naval Weapons Center.

Your monitoring of the situation would be appreciated.

New "X" Beacons Get Frequencies

Frequencies have now been assigned for the three new "X" beacons in Canada. XAW in Saglek, Newfoundland, is on 251 kHz. XBD, located in Loks Land, Northwest Territories, is on 330 kHz, and XAS, located in Brevoort, also in the Northwest Territories, is on 385 kHz. These three join the first new Canadian "X" beacon, XBE, in Bearskin Lake, Ontario, which is transmitting on 206 kHz.

The plan to relocate Southern California's Dana Point radio beacon has been

rescinded, reports a recent edition of *The Lowdown*. The Coast Guard has apparently cancelled their plans to move DP on 292 kHz from the outer breakwater to the inner jetty. Also cancelled were plans to change the beacon's identifier to DN and move it to 310 kHz. In short, DP will stay as it is.

Mailbag

Tony Frosino of Rochester, New York, passes along his collection of beacons. It's a nice list, gathered with a humble Sony ICF-2010 -- proving once again that you don't have to have any special equipment to hunt beacons, just skill.

207	SSN	342	AVN
215	TR	368	L
262	YGK	378	YPQ
270	YQA	392	OO
298	QO	400	RO
296	OQ	404	YL
304	PP	409	YT
309	MM	409	HBD
317	R	516	YWA

352	YUP	248	UL
222	YYW	359	LCS
235	OW		

Tony thinks that the L beacon on 368 is from Toronto, Ontario, 516-YWA is from Petawawa, Ontario and 248-UL is from Montreal.

Finally, From the "Lost and Found" column comes this list of beacons that are newly authorized, on the air or discontinued.

The two discontinued beacons, 375-MIH and 383-TVB are located at Int'l-Mitchell airport and Memorial-Mark Twain airport, repsectively. And yes, there really is an "ASS" in Brazil and an "FU" beacon in Fukue, Japan. We checked it out.

That's all for this month. Special thanks to Ken Stryker, the Longwave Club of America, and Tony Frosino of Rochester, New York. We appreciate everyone's help in making this the best longwave column anywhere.

mt

"LOST AND FOUND"

FREQ/IDENT/LOCATION

206	BIK	Bindook, Australia
243	IAK	Kay Larkin Municipal Airport, Palatka, Florida
251	XAW	Saglek, Newfoundland, Canada
263	FU	Fukue, Japan (formerly on 264 kHz)
267	KE	Kushimoto, Japan (formerly on 275 kHz)
275	ASS	Assis, Brazil
290	L	Twillingate (Long Point Light), Newfoundland (ex-317 kHz)
307	TAU	Taura, Ecuador (formerly 201 kHz)
312	SAL	Vina del Mar, Chile
316	SM	Samui, Thailand
330	XBD	Loks Land, North West Territories, Canada
332	KII	King Island, Australia (formerly "KI")
345	TUP	Tupa, Brazil
346	IM	Izumo, Japan (formerly 227 kHz)
349	IG	Ishigaki (Ishigaki Island), Japan (formerly 284 kHz)
375	MIH	Brownsville, Texas (discontinued)
383	TVB	Cabool, Missouri (discontinued)
385	XAS	Brevoort, North West Territories, Canada
388	AT	Atiu, Cook Island
430	VA	Varadero, Cuba

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notes from the frequency manager . . .

Greg Jordan,
2144-F Ravenglass Place
Raleigh, NC 27612

Larry Miller
Pennsylvania

MIDDLE EAST SITUATION HEATS UP: Things in the Middle East have really been hot lately. But WAIT! Are we going to talk about that *again*? No, enuff's enuff.

COMMENTS GALORE: Instead, let's look to see what else's going on? A lot, that's what. We've tried a few different things over the past year or so here in the frequency section. We've ruffled some feathers, doused a few flames, put down a couple of mass uprisings, and more or less managed to get a comment or two out of just about everyone.

In fact, if I had my two cents worth for everyone's two cents worth that I've gotten, I'd be a millionaire several times over. That's why you're going to see some massive changes in the coming months here in the frequency section. Next month, it will be an entirely new section, top to bottom (okay, it's revised monthly, but that doesn't count).

You'll see a lot more comments like those in last year's October issue (brought back this month to an extent). And a lot more stations. We will not accept responsibility for your inability to hear all of those stations, however, so you legal types don't get your hopes up.

In addition to these changes, look for something even more exciting to come. As always, by popular demand.

TRIANGLE LISTENERS, UNITE: Here's your chance to get together for a real think-session about *MT*. If you live in the Triangle area (Raleigh/Durham/Chapel Hill) or have easy access to it (the entire Carolina Corridor - Charlotte, Winston-Salem, Greensboro, to the triangle - all 4 million of you!) and would like to attend an early morning or late evening Think Tank about the *MT* Frequency Section, call me and I'll give you the details. The number's listed but it'll cost you 50 cents to get it. Results will be reported here.

notes from the program manager . . .

Kannon Shanmugam
4412 Tumberry Circle
Lawrence, Kansas 66047

John Carson
Oklahoma

Jim Frimmel
Texas

GREETINGS: Welcome to the first-ever combined frequency and program section! We at *Monitoring Times* have spent long hours working on what you see in these pages, and we sincerely hope that the changes in the sections will help you get more out of your listening.

Comments? Suggestions? This combined section marks a first in the industry, so we're anxious to know your opinions. If you've got any contributions, we'd be glad to hear from you; it's your help which will make the guide more useful, so don't hesitate to write! Thanks.

STARRY-EYED: The BBC has unveiled a new, monthly -- that's right, monthly -- program on astronomy. "Seeing Stars" replaces "Short Story" on the first weekend of the month. The program explores the role astronomy plays in culture and history, and provides guided tours of the night sky.

"Seeing Stars," hosted by Heather Couper and Nigel Henbest, can be heard on the first Saturday of the month at 0130 UTC -- that's on Friday night in North America -- with repeats on the next day (Sunday) at 1115 UTC.

And lest you wonder, the BBC's other monthly program, "Two Cheers," is still going strong, with a satirical look at the political events of the month just past. The program can be heard on the first Wednesday of the month (or, more rarely, on the last Wednesday) at 1530 UTC, with the repeat airing on Thursdays at 0030 UTC. (That's on Wednesday evenings in North America.)

DEUTSCHE WELLE CHANGES: Some changes have been made in the Deutsche Welle lineup. One new addition is "Through German Eyes," where prominent German journalists discuss the perception of world developments in Germany. The program can be heard on Sundays at about 1513 UTC, with repeats on Saturdays at 0134, 0334, and 0534 UTC. You guessed it -- that's on Friday evenings for North American listeners.

This addition has bumped "Africa in the German Press," a weekly look at what the German papers have to say about Africa, to a new time. The program can now be heard on Mondays at 0434 and 0634 UTC, replacing the Monday editions of "Africa Report."

how to use the shortwave guide

The *Monitoring Times* Shortwave Guide is a section of frequencies, programming, propagation forecasts and other listening tips to enhance your enjoyment in listening to shortwave broadcast stations.

The frequencies listed in the guide are for English language transmissions, updated each month. However, which frequencies may be audible from your location can only be determined by experimentation; it will vary according to time of day or night, season, or sun spots! Refer to the propagation charts on page 84 for aid in predicting conditions.

Because of such variations in reception conditions, it is advisable to begin tuning in a station a few minutes before your desired program. As a general practice, we suggest you begin with the lower frequencies a station is broadcasting on and work your way up the dial.

The frequency listings are followed by a selected list of advance programming for the most popular listening hours. Each month features a variety of stations and programming in addition to the standard BBC and VOA. News broadcasts, however, are listed every month in their entirety in "Newsline."

To listen to a particular program or news broadcast, simply consult the frequency listing at the scheduled start time to find the frequencies in use by the station at that hour.

legend**Frequencies:**

- * The first four digits of an entry are the broadcast start time in UTC.

The second four digits represent the end time.

- * In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. "TEN" indicates a tentative schedule and "TES" a test transmission.

- * The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

SSB	Single Sideband transmission.
v	Indicates that the frequency it follows varies
USB, LSB	Upper and lower sideband transmissions; usually refer only to the individual frequency after which they appear.
[ML]	Indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
*	English lessons; does not contain regularly scheduled programming.

Programs:

- * Programs are listed in order of the program start time in UTC.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week using the same day codes listed above. The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

newsline

Newsline is your guide to news broadcasts on the air. ■ All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. ■ All broadcasts are daily unless otherwise noted by brackets enclosing the day codes.

0000	
BBC	
Christian Science Monitor	
Kol Israel	
Radio Australia	
Radio Beijing	
Radio Canada Int'l	
Radio Finland [T-A]	
Radio Havana Cuba [T-S]	
Radio Kiev	
Radio Korea	
Radio Luxembourg	
Radio Moscow	
Radio New Zealand Int'l [M-A]	
Radio Prague Int'l	
Radio Sofia	
Radio Thailand	
Spanish Foreign Radio	
Voice of America	
WWCR (USA Radio News) [T-A]	
0005	
Radio Pyongyang	
0010	
Radio Beijing*	
0030	
BRT, Brussels [T-A]	
Christian Science Monitor	
(Asia) [M]	
Christian Science Monitor [T-F]	
HCJB*	

Radio Budapest [T-S]	Radio Moscow
Radio Canada Int'l [S-M]	Radio New Zealand Int'l [M-F]
Radio Havana Cuba [T-S]	Radio Prague Int'l
Radio Jamahiriya, Libya	Radio Thailand
Radio Moscow (World Service)	Radio Yugoslavia
Radio Netherlands [T-S]	Radiotelevisione Italiana
Voice of America (Americas, East Asia) (Special English) [T-S]	RAE, Buenos Aires [T-A]
Voice of America (East Asia) (Special English) [M]	Spanish Foreign Radio
0045	Voice of America
Radio Korea (News Service)	Voice of Indonesia
0051	WWCR (USA Radio News) [T-S]
Spanish Foreign Radio [S]	0115
0055	Radio Havana Cuba* [T-S]
KUSW [T-S]	0125
WRNO (ABC News) [H, A]	HCJB
0100	0130
All India Radio	Christian Science Monitor (Asia) [M]
BBC	Christian Science Monitor [T-F]
Christian Science Monitor	Radio Austria Int'l
Deutsche Welle	Radio Budapest
Kol Israel	Radio Havana Cuba [T-S]
Radio Australia	Radio Moscow (World Service)
Radio Belize	Voice of Greece [M-A]
Radio Canada Int'l [S-M]	0151
Radio Havana Cuba [T-S]	Spanish Foreign Radio [S]
Radio Japan	KUSW [T-S]
Radio Luxembourg	Voice of Indonesia

0200	English)
BBC	Radio Portugal [T-A]
Christian Science Monitor	Radio Tirana, Albania
Deutsche Welle	0245
Kol Israel	Radio for Peace Int'l (UN Radio) [T-A]
Radio Australia	Radio Korea (News Service)
Radio Bras, Brasilia [T-S]	0255
Radio Canada Int'l [T-A]	KUSW [T-S]
Radio Havana Cuba [T-S]	0300
Radio Luxembourg	BBC
Radio Moscow	Christian Science Monitor
Radio New Zealand Int'l [M-F]	Deutsche Welle
Radio Romania Int'l	Radio Australia
Radio Thailand	Radio Beijing
Swiss Radio Int'l	Radio Belize
Voice of America	Radio Havana Cuba [T-S]
Voice of Free China	Radio Japan
WWCR (USA Radio News) [T-A]	Radio Moscow
0215	Radio New Zealand Int'l [M-F]
BBC (Asia)	Radio Prague Int'l
Radio Cairo	Radio Thailand
0230	Voice of America
Christian Science Monitor (Africa, Europe) [M]	Voice of Free China
Christian Science Monitor [T-F]	WWCR (USA Radio News) [T-S]
HCJB*	0309
Radio Havana Cuba [T-S]	BBC*
Radio Moscow (World Service)	0310
Radio Pakistan (Special	Radio Beijing*

newsline

0315
 Radio Cairo
 Radio France Int'l
 Radio Havana Cuba* [T-S]
0325
 HCJB
0330
 BBC (Africa)*
 Christian Science Monitor (Africa, Europe) [M]
 Christian Science Monitor [T-F]
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
 Radio Netherlands [T-S]
 Radio Tirana, Albania
 UAE Radio, Dubai
0340
 Voice of Greece [M-A]
0350
 Radio Yerevan
 Radiotelevisione Italiana
0355
 KUSW [T-S]
 Radio Japan [M-F]

0400
BBC
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Beijing
 Radio Canada Int'l
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio New Zealand Int'l [M-F]
 Radio Prague Int'l
 Radio Romania Int'l
 Radio RSA
 Radio Sofia
 Radio Tanzania
 Radio Thailand
 Swiss Radio Int'l
 Voice of America
 Voice of Turkey
 WRNO (ABC News) [F]
 WWCR (USA Radio News) [M-A]
0405
 Radio New Zealand Int'l* [M-F]
 Radio Pyongyang
0410
 Radio Beijing*
0425
 Radiotelevisione Italiana
0430
 BBC (Africa)*
 Christian Science Monitor (Africa, Europe, NE Asia) [M]
 Christian Science Monitor [T-F]
 Radio Botswana
 Radio Canada Int'l [T-A]
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
 Radio Tirana, Albania
0455
 KUSW [T-S]
 WYFR (Network) [T-A]

0500
BBC
 Christian Science Monitor
 Deutsche Welle
HCJB*
 Kol Israel
 Radio Australia
 Radio Beijing
 Radio Havana Cuba [T-S]
 Radio Japan
 Radio Lesotho

Radio Moscow
 Radio New Zealand Int'l [M-A]
 Radio Thailand
 Spanish Foreign Radio
 Voice of America
 WWCR (USA Radio News) [T-A]
0510
 Radio Beijing*
 Radio Botswana
0515
 Radio Havana Cuba* [T-S]
0530
 Christian Science Monitor (Africa, Europe, NE Asia) [M]
 Christian Science Monitor [T-F]
 Radio Austria Int'l
 Radio Havana Cuba [T-S]
 Radio Jordan
 Radio Moscow (World Service)
 Radio Romania Int'l
 Radio Thailand
 UAE Radio, Dubai
 Voice of Nigeria
0545
 Voice of Nigeria*
0551
 Spanish Foreign Radio [S]
0555
 HCJB
 KUSW [S, T-F]
0600
BBC
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Havana Cuba [T-S]
 Radio Moscow
 Radio New Zealand Int'l [M-F]
 Voice of America
0605
 Radio New Zealand Int'l* [M-F]
 Radio Pyongyang
0618
 Radio Canada Int'l [M-F]
0630
 BBC (Africa)*
 Christian Science Monitor [M-F]
0640
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
0645
 Radio Polonia
 Radio Tirana, Albania
 Swiss Radio Int'l
0655
 KUSW [S, T-F]
0700
BBC
 Christian Science Monitor
 Radio Australia
 Radio Havana Cuba [T-S]
 Radio Japan
 Radio Moscow
 Radio New Zealand Int'l [M-F]
 Radio Tirana, Albania
 Voice of Free China
0715
 Radio Havana Cuba* [T-S]
0730
 BBC (Africa)*
 BRT, Brussels [M-F]
 Christian Science Monitor [M-F]

HCJB*
 Radio Austria Int'l
 Radio Finland [T-A]
 Radio Havana Cuba [T-S]
 Radio Moscow (World Service)
 Radio Netherlands [M-A]
 Radio Prague Int'l
 Radio Sofia
 Swiss Radio Int'l
0755
 KUSW [S]
 Radio Japan [M-F]
0800
BBC
 Christian Science Monitor
 Deutsche Welle
 Kol Israel
 Radio Australia
 Radio Beijing
 Radio Japan
 Radio Korea
 Radio Moscow (World Service)
 Voice of Indonesia
0805
 Radio Pyongyang
0825
 HCJB
0830
 Christian Science Monitor [M-F]
0840
 Radio Beijing*
 Voice of Greece
0855
 KUSW [S]
 Voice of Indonesia
0900
BBC
 Christian Science Monitor
 Deutsche Welle
 Radio Australia
 Radio Finland [T-A]
 Radio Japan
 Radio Moscow (World Service)
0915
 Radio Korea (News Service)
0930
 Christian Science Monitor [M-F]
0940
 Deutsche Welle (Africa)* [M-F]
 Radio Beijing
 Radio Finland [T-A]
 Radio Moscow (World Service)
0955
 KUSW [S]
 Radio Japan [M-F]
1000
 All India Radio
BBC
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Finland [T-A]
 Radio France Int'l
 Radio Japan
 Radio Jordan
 Radio Polonia
 Radio Romania Int'l
 Radio Tashkent
 Radio Thailand
 Voice of America
1210
 Radio Beijing*
1215
 Radio Korea
1230
 Christian Science Monitor [M-F]
1230
 Christian Science Monitor [M-F]
 Radio Austria Int'l [M-F]
 Radio Korea [M-S]

Radio Moscow (World Service)
 Radio Netherlands [M-A]
 UAE Radio, Dubai
1040
 Voice of Greece
1055
 All India Radio
 HCJB
 KUSW [S]
1100
BBC
 Christian Science Monitor
 Deutsche Welle
 Kol Israel
 Radio Australia
 Radio Beijing
 Radio Japan
 Radio Jordan
 Radio Korea
 Radio Moscow (World Service)
 Radio RSA
 Swiss Radio Int'l
 Trans World Radio, Bonaire
1235
 Voice of Greece
1255
 KUSW [S]
1300
BBC
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize
 Radio Canada Int'l (Asia)
 Radio Canada Int'l (North America) [M-F]
 Radio Finland [T-F]
 Radio Moscow (World Service)
 Radio Romania Int'l
 Radio Tanzania [A-S]
 Radio Tirana, Albania
 Radio Yugoslavia
 Swiss Radio Int'l
 Trans World Radio, Bonaire [S]
 Voice of America
 WWCR (USA Radio News) [S-F]
1305
 Radio Pyongyang
1310
 Radio Beijing*
1325
 HCJB [M-F]
1328
 Radio Cairo
1330
 All India Radio
 BRT, Brussels [M-F]
 Christian Science Monitor [M-F]
 Radio Austria Int'l
 Radio Korea (News Service)
 Radio Moscow (World Service)
 Radio Tashkent
 Swiss Radio Int'l
 UAE Radio, Dubai
 Voice of America (Special English)
 Voice of Turkey
1346
 All India Radio (UN News) [A]
1355
 WYFR (Network) [M-F]
1400
BBC
 Christian Science Monitor
 Radio Australia
 Radio Beijing
 Radio Belize [M-F]
 Radio Canada Int'l [S]
 Radio Finland [T-A]
 Radio France Int'l
 Radio Japan
 Radio Jordan
 Radio Korea
 Radio Moscow (World Service)
 Radio Peace and Progress
 Voice of America
 WWCR (USA Radio News) [M-F]
1405
 Radio Pyongyang
1410
 Radio Beijing*
1425
 HCJB [M-F]

newsline

1430
Christian Science Monitor [M-F]
Radio Austria Int'l [M-F]
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Polonia
1455
All India Radio

1500
BBC
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Beijing
Radio Belize [M-A]
Radio Finland [T-A]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio RSA
Voice of America
1705
Radio New Zealand Int'l* [M-F]
Radio Pyongyang
1709
BBC (Africa)* [A-S]
1710
Radio Beijing*
1715
Radio Canada Int'l
Radio Korea (News Service)
1730
Christian Science Monitor [M-F]
Radio Moscow (World Service)
Radio Peace and Progress
Radio Romania Int'l
1735
WYFR (Network) [M-F]
1740
BBC (Africa)*
1755
KUSW [M-F]

1800
All India Radio
BBC
Christian Science Monitor
Kol Israel
KVOH (UPI News)
Radio Australia
Radio Belize [M-F]
Radio Bras, Brasilia [M-A]
Radio Canada Int'l
Radio Korea
Radio Lesotho
Radio Moscow (World Service)
Radio Polonia
Radio Portugal [M-F]
Radio RSA
Radio Tanzania
Voice of America
WWCR (USA Radio News) [M-F]
1900
All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
HCJB*
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Canada Int'l [M-F]
Radio Havana Cuba [M-A]
Radio Jordan [S-H]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Tanzania
Spanish Foreign Radio
Voice of America
WWCR (USA Radio News) [M-F]

1600
BBC
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Beijing
Radio France Int'l
Radio Jordan
Radio Korea
Radio Lesotho
Radio Moscow (World Service)
Radio Polonia
Radio Portugal [M-F]
Radio RSA
Radio Tanzania
Voice of America
WWCR (USA Radio News) [M-F]
1609
BBC*
1610
Radio Beijing*
Radio Botswana [M-F]
1630
BRT, Brussels [M-F]
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Polonia
UAE Radio, Dubai
Voice of America (except Africa) (Special English)

1655
WYFR (Network) [A]
1700

BBC
Christian Science Monitor
Radio Australia
Radio Beijing
Radio Belize [M-A]
Radio Canada Int'l [M-F]
Radio Havana Cuba [M-A]
Radio Jordan [S-H]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Polonia
Radio Portugal [M-F]
Radio Prague Int'l
Radio Romania Int'l
Radio Sofia
Radio Yugoslavia
1825
WYFR (Network) [A]
1830
BRT, Brussels [M-F]
Christian Science Monitor [M-F]
Radio Belize
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Polonia
Radio Prague Int'l
Radio Tirana, Albania
Swiss Radio Int'l
Voice of America (Special English)
1840
SLBC, Sri Lanka
Voice of Greece [M-A]
1855
BBC (Africa)* [M-F]
KUSW [M-A]

1900
All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
HCJB*
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Belize [M-F]
Radio Havana Cuba [M-A]
Radio Jordan [S-H]
Radio Japan
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Polonia
Radio Portugal [M-F]
Radio Prague Int'l
Voice of America
Voice of Indonesia
2005
Radio New Zealand Int'l* [S-H]
Radio Pyongyang
2010
Radio Beijing*
2025
Radio Havana Cuba* [M-A]
Radiotelevisione Italiana
2030
Christian Science Monitor [M-F]
Radio Havana Cuba [M-A]
Radio Korea
Radio Moscow (World Service)
Radio Netherlands [M-A]
2045
Radio Korea (News Service)
2055
KUSW [M-A]
Voice of Indonesia
2100

All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
KVOH (UPI News)
Radio Australia
Radio Beijing
Radio Belize [M-F]
Radio Japan
Radio Jordan [S-H]
Radio Kiev
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Prague Int'l
Radio Romania Int'l
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America
Voice of Turkey
2110
Radio Beijing*
2125
WYFR (Network) [M-F]
2130
Christian Science Monitor [M-F]
Radio Budapest
Radio Cairo
Radio Canada Int'l
Radio Moscow (World Service)
Radio Sofia
2155
KUSW [M-A]
WYFR (Network) [M-A]

2200
All India Radio
BBC
BRT, Brussels [M-F]

Christian Science Monitor
Radio Australia
Radio Beijing
Radio Canada Int'l (Asia)
Radio Canada Int'l (Europe)
Radio Finland [M-F]
Radio Havana Cuba [M-A]
Radio Moscow (World Service)
Radio New Zealand Int'l [S-F]
Radio Peace and Progress
Radio Yugoslavia
Radiotelevisione Italiana
Voice of America
Voice of Free China
2208
Voice of America (Caribbean)* [M-F]
2210
Radio Beijing*
2225
Radio Havana Cuba* [M-A]
2230
Christian Science Monitor [M-F]
Kol Israel
Radio Havana Cuba [M-A]
Radio Moscow (World Service)
Radio Polonia
Radio Sofia
Radio Tirana, Albania
Radio Vilnius
Swiss Radio Int'l
Voice of America (Special English)
WYFR (Network) [M-F]
2255
KUSW [M-F]
WYFR (Network) [M-A]

2300
BBC
Christian Science Monitor [M-A]
Radio Australia
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Vilnius
Voice of America
Voice of Turkey
2305
Radio Polonia
Radio Pyongyang
2315
All India Radio
Radio for Peace Int'l (UN Radio) [M-F]
2320
Radio Thailand
2330
Christian Science Monitor [M-F]
Radio Moscow (World Service)
Radio New Zealand Int'l [S-H]
Radio Tirana, Albania
2333
Radio Jamahiriya, Libya
2335
Voice of Greece [M-A]
2355
KUSW [M-A]
Radio Japan [M-F]



Bridget Kendall, who speaks fluent Russian, is the BBC's news reporter in Moscow.

0000 UTC

[7:00 PM EST/4:00 PM PST]

FREQUENCIES

0000-0015	Radio Prague Int'l, Czechoslovakia	7345 11680 11990
0000-0025	Radio Finland, Helsinki	9645 11755
0000-0030	Kol Israel, Jerusalem	7465 9435 11605
0000-0030	Radio Australia, Melbourne	11880 13605 15240 15380 15465 17600 17630 17750
0000-0030	Radio Canada Int'l, Montreal	5960 9755
0000-0100	All India Radio, New Delhi	9535 9910 11715 11745 15110
0000-0100	BBC World Service, London, England	5975 6005 6175 6195 7325 9590 9915 11750 12095 15260
0000-0100	Adventist World Radio, Costa Rica	9725 11870
0000-0100	CBC Northern Quebec Service, Can	9625(ML)
0000-0100	CBN, St. John's, Nfld, Canada	6160
0000-0100	CBU, Vancouver, British Columbia	6160
0000-0100	CFCF, Montreal, Quebec, Canada	6005
0000-0100	CFCN, Calgary, Alberta, Canada	6030
0000-0100	CFRB, Toronto, Ontario, Canada	6070
0000-0100	CHNS, Halifax, Nova Scotia, Canada	6130
0000-0100	Christian Science World Svc, Boston	7395 9850 13760 15225
0000-0100	CKWX, Vancouver, British Columbia	6080
0000-0100	FEBC Radio Int'l, Philippines	15490
0000-0100	KSDA, Guam	15125
0000-0100	T-A KUSW, Salt Lake City, Utah	15590
0000-0100	Radio Beijing, Beijing, China	9770 11715
0000-0100	Radio Kiev, Ukraine	7400 9860 11790 13645
0000-0100	Radio Luxembourg, Junglinster	6090

0000-0100	Radio Moscow N.American Service	11710 11730 11780 11850 11980 12040 15425 15580
0000-0100	Radio Moscow World Service	15280 17670 17890 21690
0000-0100	Radio New Zealand, Wellington	17675
0000-0100	Radio for Peace Int'l, Costa Rica	7375 13630 21566
	Radio Sofia offers a great deal of insight into recent developments in the Balkans, from a unique point of view.	
0000-0100	Radio Sofia, Bulgaria	11660 11720
0000-0100	Spanish Foreign Radio, Madrid	9630 11880
0000-0100	Voice of America-Americas Service	5995 9775 9815 11580
0000-0100	Voice of America-Caribbean Service	6130 9455 11695 15205
0000-0100	Voice of America-East Asia Service	7120 9770 11760 15185 15290 17735 17820
0000-0100	WHRI, Noblesville, Indiana	7315 9495
0000-0100	WINB, Red Lion, Pennsylvania	15145 ML
0000-0100	WRNO Worldwide, Louisiana	7355
0000-0100	WWCR, Nashville, Tennessee	7520
0000-0100	WYFR, Okeechobee, Florida	5985 13695 15170
0030-0100	Radio Australia, Melbourne	11880 15160 15240 15465
0030-0100	T-S Radio Budapest, Hungary	6110 9520 9585 9835 11910 15160
0030-0100	T-S Radio Canada Int'l, Montreal	5960 9755
0030-0100	Radio Netherlands Int'l, Hilversum	6020 6165 11740
0035-0100	HCJB, Quito, Ecuador	15155 17875 25950ssb
0050-0100	Vatican Radio, Vatican City	9605 11780 15180

PROGRAMSSundays

0005 Christian Science Monitor: Herald of Christian Science. Religious programming explaining the doctrine of Christian Science.
 0030 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
 0030 Radio Australia: Book Reading. Serialized readings from popular books.

Mondays

0005 Christian Science Monitor (Europe, Americas): The Sunday Service. See S 1605.
 0006 Christian Science Monitor (Asia): News Focus. In-depth news analyses, focusing on major international events.
 0030 BBC: In Praise of God. A half-hour program of worship.
 0030 Radio Australia: Just Out. Rob Hoskin plays recent Australian music releases.
 0034 Christian Science Monitor (Asia): Home Forum. Home and family affairs.

Tuesdays

0006 Christian Science Monitor: News Focus. See M 0006.
 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
 0030 Radio Australia: Music/Information. See S 0330.
 0034 Christian Science Monitor: Kaleidoscope. See M 1634.



Radio Canada International's English language announcer Gillian MacCormack. RCI's future is on the line again; Its listeners are urged to lend a voice of support. See "Communications," page 4, for details.

Wednesdays

0006 Christian Science Monitor: News Focus. See M 0006.
 0030 BBC: Omnibus. See T 1615.
 0030 Radio Australia: Music/Information. See S 0330.
 0034 Christian Science Monitor: Kaleidoscope. See M 1634.

Thursdays

0006 Christian Science Monitor: News Focus. See M 0006.
 0030 BBC: Smash of the Day (except January 3rd: Two Cheers for 1990). See W 1530.
 0030 Radio Australia: Music/Information. See S 0330.
 0034 Christian Science Monitor: Kaleidoscope. See M 1634.

Fridays

0006 Christian Science Monitor: News Focus. See M 0006.
 0030 BBC: The Great Musicals. A look back at some of the best musicals ever produced.
 0030 Radio Australia: Music/Information. See S 0330.
 0034 Christian Science Monitor: Home Forum. Home and family affairs.

Saturdays

0005 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0030 BBC: From the Weeklies. A review of the weekly British press.
 0030 Radio Australia: Word of Mouth. See M 1445.
 0045 BBC: Recording of the Week. See M 0545.

0100 UTC

[8:00 PM EST/5:00 PM PST]

FREQUENCIES

0100-0105	Vatican Radio, Vatican City	9605 11780 15180
0100-0115	All India Radio, New Delhi	9535 9910
0100-0125	Radio Netherlands Int'l, Hilversum	6020 6165 11740 15560
0100-0125	RAI, Rome, Italy	9575 11800
0100-0130	Kol Israel, Jerusalem	7465 9435 11605
0100-0130	CBC Northern Quebec Service, Can	9625 (ML)
0100-0130	Radio Australia, Melbourne	11880 15160 15240 15465 15560 17630 17750 17795
0100-0130	Radio Canada International, Montreal	5960 9755
0100-0130	Radio Japan Americas Svc, Tokyo	17755
0100-0130 S,M	Radio Norway, Oslo	9615 11925
0100-0130	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0100-0130	Radio Sweden, Stockholm	15405
0100-0145	Radio Yugoslavia, Belgrade	5980 6005 11735
0100-0150	Deutsche Welle, Koln, West Germany	6040 6085 6145 9565 11865
0100-0200	BBC World Service, London, England	5975 6005 6175 7325 9590 9915 11750 12095
0100-0200	CBN, St John's, Newfoundland	6160
0100-0200	CBU, Vancouver, British Columbia	6160
0100-0200	CFCF, Montreal, Quebec, Canada	6005
0100-0200	CFCN, Calgary, Alberta, Canada	6030
0100-0200	CFRB, Toronto, Ontario, Canada	6070
0100-0200	CHNS, Halifax, Nova Scotia, Canada	6130
0100-0200	Christian Science World Svc, Boston	7395 9850 13760 15225 15610 17555 (+17865 A.S.)
0100-0200	CKWX, Vancouver, British Columbia	6080
0100-0200	FEBG Radio Int'l, Philippines	15490
0100-0200	HCJB, Quito, Ecuador	15155 15230 17875
0100-0200 T-A	KUSW, Salt Lake City, Utah	15590
0100-0200	WWCR Nashville	7520
0100-0200	Radio Havana Cuba	11820
0100-0200	Radio Japan General Svc, Tokyo	5960 17765 17810 17835 17845

0100-0200	Radio Luxembourg, Junglinster	6090
0100-0200	Radio Moscow North American Svc	11690 11710 11730 11780 11850 11980 12040 15290
0100-0200	Radio for Peace Int'l, Costa Rica	7375 (T-A add 13630)
	Radio Thailand: If you can catch this one, try to listen for intriguing stories about opium trading, pirates on the high seas, and the problems of the southeast Asian area	
0100-0200	Radio Thailand, Bangkok	4830 9655 11905
0100-0200	Spanish Foreign Radio, Madrid	9630 11880
0100-0200	Voice of America-Americas Service	5995 9775 9815 11580 15205
0100-0200	Voice of America-Caribbean Service	6130 9455
0100-0200	Voice of America-East Asia Service	7115 7205 9740 11705 15205 21525
0100-0200	Voice of Indonesia, Jakarta	11753 11785
0100-0200	WHRI, Noblesville, Indiana	7315 9495
0100-0200	WINB Red Lion, PA	15145 ML
0100-0200	WRNO Worldwide, Louisiana	7355
0100-0200	WWCR, Nashville, Tennessee	7520
0100-0200	WYFR, Okeechobee, Florida	5985 9505 11720 17612
0130-0200	Radio Austria International, Vienna	9870 9875 13730
0130-0200	Radio Australia, Melbourne	11880 15160 15240 15465 15560 17630 17750 17795 21525 21740 21775
0130-0200	Radio Baghdad, Iraq	11755 11810 11830 21585
0130-0200	Radio Budapest, Hungary	6110 9520 9585 9835
0130-0200 S,M	Radio Canada Int'l, Montreal	11910 15160
0130-0200 M-A	Voice of Greece, Athens	5960 9755
0145-0200	Radio Korea, Seoul	9420 9395 11645
0145-0200	Vatican Radio, Vatican City	6165 9640 15575
		9650 11750 15135

PROGRAMS

Sundays

0101 BBC: Play of the Week. Hour-long drama selections.
 0105 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0130 Radio Australia: At Your Request. Dick Paterson plays music requests.

Mondays

0101 BBC: Feature/Drama. Program details to be announced.
 0106 Christian Science Monitor (Asia): Encore. Features, repeated by popular request.
 0130 Radio Australia: Music/Information. See S 0330.
 0134 Christian Science Monitor (Asia): Letterbox. Staff members respond to listener letters.
 0145 BBC: Instruments of the Orchestra. A look at each of the instruments in a typical orchestra.
 0148 Christian Science Monitor (Asia): Religious Article. A reading from The Christian Science Monitor.

Tuesdays

0101 BBC: Outlook. See M 1405.
 0106 Christian Science Monitor: One Norway Street. See M 2306.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Personal View. See S 0445.
 0130 Radio Australia: Music/Information. See S 0330.
 0134 Christian Science Monitor: Letterbox. See M 0134.
 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
 0148 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

0101 BBC: Outlook. See M 1405.
 0106 Christian Science Monitor: Curtain Call. See T 2306.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Talk. A short talk on any subject under the sun.
 0130 Radio Australia: Music/Information. See S 0330.
 0134 Christian Science Monitor: Letterbox. See M 0134.
 0145 BBC: Country Style. David Allan presents British country music.
 0148 Christian Science Monitor: Religious Article. See M 0148.

Thursdays

0101 BBC: Outlook. See M 1405.
 0106 Christian Science Monitor: One Norway Street. See M 2306.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Waveguide. See M 0530.
 0130 Radio Australia: Music/Information. See S 0330.
 0134 Christian Science Monitor: Letterbox. See M 0134.
 0140 BBC: Book Choice. See S 0225.
 0145 BBC: The Farming World. Developments and issues in the world of agriculture.
 0148 Christian Science Monitor: Religious Article. See M 0148.

Fridays

0101 BBC: Outlook. See M 1405.
 0106 Christian Science Monitor: Encore. Features, repeated by popular request.
 0125 BBC: Financial News. See M 2310.
 0130 BBC: Folk in Britain or Jazz Now and Then. See H 1345.
 0130 Radio Australia: Music/Information. See S 0330.
 0134 Christian Science Monitor: Letterbox. See M 0134.
 0145 BBC: Global Concerns. Issues of an environmental nature.

0148 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

0101 BBC: Outlook. See M 1405.
 0105 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0125 BBC: Financial News. See M 2310.



Gavin Claxton presents the youth magazine show, "Megamix," on the BBC.

0130 BBC: Short Story (except January 5th: Seeing Stars). See S 1115.
 0130 Radio Australia: Music/Information. See S 0330.
 0145 BBC: Here's Humph! All that Jazz with Humphrey Lyttelton.

0200 UTC

[9:00 PM EST/6:00 PM PST]

FREQUENCIES

0200-0220	Radio Veritas-Asia, Philippines	15220 15360	0200-0300	Radio Baghdad, Iraq	17795 21525 21740 21775
0200-0230	British Forces Radio, UK	7125 9640 13745	0200-0300	Radio Cairo, Egypt	11755 11810 11830 21585
0200-0300	Radio Sweden	9695 11705	0200-0300	T-A Radio Canada Int'l, Montreal	9475 9675
0200-0230	FEBC Radio Int'l, Philippines	15490	0200-0300	Radio Havana Cuba	9535 9755 11940 13720
0200-0230	Kol Israel, Jerusalem	7465 9435 11605	0200-0300	Voice of Free China	9710 11820
0200-0230	H,A Radio Budapest, Hungary	6110 9520 9585 9835 11910 15160	0200-0300	Radio Cultura, Guatemala	5950 9680 11740
0200-0230	S.M Radio Norway, Oslo	9615 11735	0200-0300	Radio Luxembourg, Junglinster	3300
0200-0230	SLBC Domestic Service, Sri Lanka	4940	0200-0300	Radio Moscow North American Svc	6090
0200-0230	Swiss Radio International, Berne	6095 6135 9725 9885 12035 17730	0200-0300	Radio Moscow World Service	11690 11710 11780 11850
0200-0230	T-A Voice of America	5995 9775 9815 11580 15205	0200-0300	Radio New Zealand, Wellington	11980 12040 12050 13605
0200-0250	Deutsche Welle, Koln, W. Germany	7285 9615 9690 11835 11945 15235 17770	0200-0300	T-A Radio For Peace Int'l, Costa Rica	13675 15290 15315 15425
0200-0300	BBC World Service, London, England	5975 6005 6110 6175 7135 7325 9410 9590 9915 11750 12095 15260 15390 21715	0200-0300	Radio Romania Int'l, Bucharest	15435 15530 15580 15595
0200-0300	CBC Northern Quebec Service, Can	9625 (ML)	0200-0300	Radio Thailand, Bangkok	15280 17690 21690 21790
0200-0300	CBN, St. John's, Newfoundland, Can	6160	0200-0300	RAE, Buenos Aires, Argentina	11710
0200-0300	CBU, Vancouver, British Columbia	6160	0200-0300	Voice of America-South Asia Service	7375 USB (T-A add 13630)
0200-0300	CFCF, Montreal, Quebec, Canada	6005	0200-0300	Voice of Free China, Taiwan	5990 6155 9510 9570
0200-0300	CFCN, Calgary, Alberta, Canada	6030	0200-0300	WHRI, Noblesville, Indiana	11830 11940 15380
0200-0300	CFRB, Toronto, Ontario, Canada	6070	0200-0300	WINB, Red Lion, Pennsylvania	4830 9655 11905
0200-0300	CHNS, Halifax, Nova Scotia, Canada	6130	0200-0300	WRNO Worldwide, Louisiana	15145
0200-0300	Christian Science World Svc, Boston	9455 9850 13720 13760 (+ 17865 & 17555 A,S)	0200-0300	WWCR, Nashville, Tennessee	7355
0200-0300	CKWX, Vancouver, British Columbia	6080	0200-0300	WYFR, Okeechobee, Florida	7520
0200-0300	HCJB, Quito, Ecuador	15155 17875 25950ssb	0230-0245	Radio Pakistan (Slow speed news)	6065 9505 11720
0200-0300	KSDA, Guam	13720	0230-0300	T-A Radio Portugal, Lisbon	9545 15115 17640 17690
0200-0300	T-A KUSW, Salt Lake City, Utah	15590	0230-0300	Radio Sweden, Stockholm	17725 21730
0200-0300	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750	0230-0300	Radio Tirana, Albania	9600 9680 9705 11840
			0230-0300		9695 11705
			0230-0300		9500 11825

PROGRAMS

Li Dan, Director of the English Department at Radio Beijing

Sundays

0205 Christian Science Monitor: Herald of Christian Science. See S 0005.
0209 BBC: British Press Review. Editorial opinion in the British press.
0215 BBC: They Made Our World. Scientists who shaped the future of mankind.
0225 BBC: Book Choice. Short reviews of current or future best-sellers.
0230 BBC: Feature. Topical programming on various subjects.
0230 Radio Australia: Fine Music Australia. Jocelyne Terry presents the best in Australian classical music.

Mondays

0205 Christian Science Monitor (Americas, Oceania): The Sunday Service. See S 1605.

0206 Christian Science Monitor (Europe, Africa): News Focus. See M 0006.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
0230 BBC: Composer of the Month. A month-long series on a particular classical music composer.
0230 Radio Australia: Music/Information. See S 0330.
0234 Christian Science Monitor (Europe, Africa): Home Forum. See M 0034.

Tuesdays

0206 Christian Science Monitor: News Focus. See M 0006.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
0230 Radio Australia: Music/Information. See S 0330.
0234 Christian Science Monitor: Kaleidoscope. See M 1634.

Wednesdays

0206 Christian Science Monitor: News Focus. See M 0006.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Health Matters. See M 1115.
0230 BBC: Feature. Topical programming on various subjects.
0230 Radio Australia: Book Reading. See S 0030.
0234 Christian Science Monitor: Kaleidoscope. See M 1634.

Thursdays

0206 Christian Science Monitor: News Focus. See M 0006.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Network UK. See T 0215.
0230 BBC: Assignment. Examinations of current topical issues.
0230 Radio Australia: Music/Information. See S 0330.
0234 Christian Science Monitor: Kaleidoscope. See M 1634.

Fridays

0206 Christian Science Monitor: News Focus. See M 0006.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Seven Seas. A weekly program about ships and the sea.
0230 BBC: Drama. See H 1130.
0230 Radio Australia: Music/Information. See S 0330.
0234 Christian Science Monitor: Kaleidoscope. See M 1634.

Saturdays

0205 Christian Science Monitor: Herald of Christian Science. See S 0005.
0209 BBC: British Press Review. See S 0209.
0215 BBC: Network UK. See T 0215.
0230 BBC: People and Politics. Background to the British political scene.
0230 Radio Australia: This Australia. See S 0430.

0300 UTC

[10:00 PM EST/7:00 PM PST]

FREQUENCIES

0300-0315	Azad Kashmir Radio, Pakistan	7286 4980 3665
0300-0330	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775
0300-0330	Radio Baghdad, Iraq	11755 11810 11830
0300-0330	Radio Cairo, Egypt	9475 9675
0300-0330	Radio Japan, Tokyo	15325 17825 21610
0300-0330	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0300-0330	WINB Red Lion, PA	15145 ML
0300-0350	Deutsche Welle, Kolin, West Germany	6085 6120 9545 9605
0300-0355	Radio Beijing, China	9690 9770 11715
0300-0400	BBC World Service, London, England	5975 6005 6175 6195 7135 7325 9410 9600 9915 11750 12095 15220 15260 15420 17705 21715
0300-0400	CBC, Northern Quebec Service, Can	9625 (ML)
0300-0400	CBN, St. John's, Newfoundland, Can	6160
0300-0400	CBU, Vancouver, British Columbia	6160
0300-0400	CFCF, Montreal, Quebec, Canada	6005
0300-0400	CFRB, Toronto, Ontario, Canada	6070
0300-0400	CFCN, Calgary, Alberta, Canada	6030
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130
0300-0400	Christian Science World Svc, Boston	9455 9850 13720 13760 15225 (+17865 & 17555 A.S.)
0300-0400	CKWX, Vancouver, British Columbia	6080
0300-0400	Faro del Caribe, San Jose, Costa Rica	5055 9645
0300-0400	HCJB, Quito, Ecuador	9745 15155
0300-0400	T-A KUSW, Salt Lake City, Utah	15590/11695
0300-0400	Radio Havana, Cuba	9710 11820
0300-0400	Radio Cultural, Guatemala	3300
0300-0400	Radio Japan, Tokyo	5960 15325 17825

0300-0400	Radio Moscow North American Svc	9635 12050 13605 15180 15425 15455 15530 15580 15595
0300-0400	Radio Moscow World Service	15280 17690 21690 21790
0300-0400	Radio New Zealand, Wellington	17675
0300-0400	Trans World Radio, Bonaire	9535 11930
0300-0400	Voice of America-Africa Service	6035 7170 7280 9525 9575 11835
0300-0400	Voice of Free China, Taiwan	5950 7445 9680 9765
0300-0400	WHRI, Noblesville, Indiana	7315 9495
0300-0400	WRNO Worldwide, Louisiana	7355
0300-0400	WWCR, Nashville, Tennessee	7520
0300-0400	WYFR, Okeechobee, Florida	6065 9505 15440
0310-0325	Vatican Radio, Vatican City	11725
0315-0330	Radio for Peace Int'l, Costa Rica	7375 USB
0315-0345	Radio France International, Paris	3965 5990 7135 7280 9745 9790 9800 11705
0330-0400	Radio Sweden	9695 11705
0330-0400	Radio Netherlands Int'l, Hilversum	6020 6165 9590 11720
0330-0400	Radio Tirana, Albania	9500 11825
0330-0400	Radio Tanzania	9684
0330-0400	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17795 21525
0330-0400	United Arab Emirates Radio, Dubai	11945 13675 15400 15435
0340-0350	M-A Voice of Greece, Athens	9395 9420 11645
0349-0357V	Radio Yerevan, Armenia	11675 11790 15180 15455 15485 17555
0350-0400	RAI, Rome, Italy	11905 15330 17795 17690 17665

PROGRAMS

Sundays

0305 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0310 Radio Australia: Back Page. Brendon Teifer looks at sports in the Asian/Pacific region.
 0315 BBC: Society Today. A weekly look at changes in Britain.
 0330 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
 0330 Radio Australia: Music/Information. Overnight music, interspersed with news.
 0350 BBC: Write On.... Paddy Feeny presents listener letters.

Mondays

0306 Christian Science Monitor (Europe, Africa): Encore. See M 0106.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: Good Books. A recommendation of a book to read.
 0330 BBC: Anything Goes. See S 1430.
 0330 Radio Australia: Music/Information. See S 0330.
 0334 Christian Science Monitor (Europe, Africa): Letterbox. See M 0134.
 0348 Christian Science Monitor (Europe, Africa): Religious Article. See M 0148.

Tuesdays

0306 Christian Science Monitor: One Norway Street. See M 2306.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
 0330 Radio Australia: Music/Information. See S 0330.
 0334 Christian Science Monitor: Letterbox. See M 0134.

0348 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

0306 Christian Science Monitor: Curtain Call. See T 2306.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Discovery. An in-depth look at scientific research.
 0330 Radio Australia: Music/Information. See S 0330.
 0334 Christian Science Monitor: Letterbox. See M 0134.
 0348 Christian Science Monitor: Religious Article. See M 0148.

Thursdays

0306 Christian Science Monitor: One Norway Street. See M 2306.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Quiz. See M 1215.
 0330 Radio Australia: Music/Information. See S 0330.
 0334 Christian Science Monitor: Letterbox. See M 0134.
 0348 Christian Science Monitor: Religious Article. See M 0148.

Fridays

0306 Christian Science Monitor: One Norway Street. See M 2306.
 0313 Radio Australia: Sports Report. See S 1313.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0330 Radio Australia: Music/Information. See S 0330.
 0334 Christian Science Monitor: Letterbox. See M 0134.
 0348 Christian Science Monitor: Religious Article. See M 0148.



Looking over the copy at the VOA's London news center are (left to right) correspondent Gil Butler, and editors Paul Francuch and Edie Smith.

Saturdays

0305 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0313 Radio Australia: Music/Information. See S 0330.
 0315 BBC: The World Today. See M 1645.
 0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
 0330 Radio Australia: Ring the Bells. The week's developments in Australian politics.

0400 UTC

[11:00 AM EST/8:00 PM PST]

FREQUENCIES

0400-0410	M-F Radio Zambia, Lusaka	4910
0400-0410	RAI, Rome, Italy	11905 15330 17795
0400-0415	Radio Prague Int'l, Czechoslovakia	5930 7345 11680
0400-0425	Radio Cultural, Guatemala	3300
0400-0425	Radio Netherlands Int'l, Hilversum	9590 11720
0400-0430	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17795 21525 21740 21775
0400-0430	Radio Romania Int'l, Bucharest	5990 6155 9510 9570 11830 11940 15380
0400-0430	Radio Tanzania	9684
0400-0430	Radio Thailand, Bangkok	4830 9655 11905
0400-0430	Swiss Radio International, Berne	6135 9725 9885 12035 13685 17670
0400-0430	Trans World Radio, Bonaire	11930 9535
0400-0450	Deutsche Welle, Köln, West Germany	7225 7150 9765 9565 11765 15265
0400-0450	Radio Pyongyang, North Korea	15180 15230 17765
0400-0455	Radio Beijing, China	11685 11840
0400-0500	BBC World Service, London, England	5975 6005 6195 7105 7120 9410 9580 9600 9610 9670 9915 12095 15070 15245 17885 21470 21715
0400-0500	CBC, Northern Quebec Service	9625 (ML)
0400-0500	CBN, St. John's, Newfoundland, Can	6160
0400-0500	CBU, Vancouver, British Columbia	6160
0400-0500	CFCF, Montreal, Quebec, Canada	6005
0400-0500	CFCN, Calgary, Alberta, Canada	6030
0400-0500	CFRR, Toronto, Ontario, Canada	6070
0400-0500	CHNS, Halifax, Nova Scotia, Canada	6130
0400-0500	Christian Science World Svc, Boston	9455 9840 13720 13760

0400-0500	CKWX, Vancouver, British Columbia	15225 17780 (+17555 A.S) 6080
0400-0500	HCJB, Quito, Ecuador	17875 15155
0400-0500	KSDA, Guam	15225
0400-0500	T-A KUSW Salt Lake City, Utah	9815 IRR
0400-0500	Radio Canada Int'l, Montreal	11925
0400-0500	Radio Havana Cuba	9710 9750 11760 11820
0400-0500	Radio Moscow North American Svc	9635 11895 12050 13605 15180 15425 15455 15530 15595 (+17605 from 0430)
0400-0500	Radio Moscow World Service	15280 17690 21690 21790
0400-0500	Radio New Zealand, Wellington	17675
0400-0500	Radio for Peace Int'l, Costa Rica	7375 USB
0400-0500	Radio RSA, Johannesburg	7270 11900
0400-0500	Radio Sofia, Bulgaria	7115 11720 11735 11760 6025 6035 7280 9525
0400-0500	Voice of America-Africa Service	9575 11785 11835
0400-0500	Voice of America-Middle East Service	3980 5995 6040 6140 7170 7200 11785 15205
0400-0500	Voice of Turkey, Ankara	9445 17880
0400-0500	WHRI, Noblesville, Indiana	7315 9495
0400-0500	S-F WMLK Bethel, Pennsylvania	9465
0400-0500	WRNO Worldwide, Louisiana	6185
0400-0500	WWCR, Nashville, Tennessee	7520
0400-0500	WYFR, Okeechobee, Florida	6065 9505
0425-0440	RAI, Rome, Italy	5990 7275
0430-0500	M-F NBC Windhoek, Namibia	3270 3290
0430-0500	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775
0430-0500	Radio Tirana, Albania	9500 11835
0430-0500	IRR Radio Truth (clandestine intended for Zimbabwe)	5015
0455-0500	Voice of Nigeria, Lagos	7255

PROGRAMSSundays

0405 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0430 BBC: Pop Music. A series on various musical subjects.
 0430 Radio Australia: This Australia. Documentaries about the land "down under."
 0445 BBC: Personal View. A personal opinion on topical issues in British life.

Mondays

0405 Christian Science Monitor (Americas, Oceania): The Sunday Service. See S 1605.
 0406 Christian Science Monitor (Europe, Africa, NE Asia): News Focus. See M 0006.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.

0430

Radio Australia: Matters of Faith. Dallas Adair examines the doctrines and beliefs of Asian/Pacific faiths.
 0434 Christian Science Monitor (Europe, Africa, NE Asia): Home Forum. See M 0034.
 0445 BBC: Feature program dealing with any subject under the sun.

Tuesdays

0406 Christian Science Monitor: News Focus. See M 0006.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: World of Country Music. A look at country music from all around the world.
 0434 Christian Science Monitor: Kaleidoscope. See M 1634.
 0445 BBC: Europe's World. See T 0145.

Wednesdays

0406 Christian Science Monitor: News Focus. See M 0006.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: Music of Radio Australia. See S 1113.
 0434 Christian Science Monitor: Kaleidoscope. See M 1634.
 0445 BBC: Country Style. See W 0145.

Thursdays

0406 Christian Science Monitor: News Focus. See M 0006.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: Music of Radio Australia. See S 1113.
 0434 Christian Science Monitor: Kaleidoscope. See M 1634.
 0445 BBC: Andy Kershaw's World of Music. See M 0215.

Fridays

0406 Christian Science Monitor: News Focus. See M 0006.
 0430 BBC: Off the Shelf. See M 0430.
 0430 Radio Australia: Communicator. See S 1430.
 0434 Christian Science Monitor: Kaleidoscope. See M 1634.
 0445 BBC: Folk in Britain or Jazz Now and Then. See H 1345.

Saturdays

0405 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0430 BBC: Here's Humph! See A 0145.
 0430 Radio Australia: Business Horizons. See T 1130.
 0445 BBC: Worldbrief. See F 2315.



New Ideas, the BBC's program on inventions and creative ideas in the marketplace, is presented by Andrew Dunn, Peter Goodwin, and Roberta Symes.

0500 UTC**[12:00 PM EST/9:00 PM PST]****FREQUENCIES**

0500-0505	Radio Lesotho	4800
0500-0515	Azad Kashmir Radio, Pakistan	7268 4980 3665
0500-0515	Kol Israel, Jerusalem	9435 11605 11655 12077 15640 17575
0500-0520	Vatican Radio	6185 9645
0500-0530	Vatican Radio African Service	17710 17730 21650
0500-0530	M-F NBC Windhoek, Namibia	3270 3290
0500-0545	Radio New Zealand, Wellington	17675
0500-0550	Deutsche Welle, Koln, West Germany	5960 6120 9670 9700 11845
0500-0600	BBC World Service, London, England	5975 6005 6195 7120 9410 9600 9640 9915 12095 15070 17740 17885 21470 21715
0500-0600	CBU, Vancouver, British Columbia	6160
0500-0600	CFCF, Montreal, Quebec, Canada	6005
0500-0600	CFCN, Calgary, Alberta, Canada	6030
0500-0600	CFRB, Toronto, Ontario, Canada	6070
0500-0600	Christian Science World Svc, Boston	9455 9840 13720 13760 15225 17780 (+17555 A.S.)
0500-0600	CHNS, Halifax, Nova Scotia, Canada	6130
0500-0600	CKWX, Vancouver, British Columbia	6080
0500-0600	HCJB, Quito, Ecuador	15155 17875
0500-0600	Radio Australia, Melbourne	11880 15160 15240 15320 15465 15560 17630 17750 17795 21525 21740 21775
0500-0600	Radio Havana Cuba	5965 9710 11760 11820

0500-0600	Radio Japan General Service, Tokyo	15195 17765 17810 17825 17890
0500-0600	Radio Moscow North American Svc	9635 11895 12050 13605 15180 15425 15455 15530 15595 17605
0500-0600	Radio Moscow World Service	15280 17690 21690 21790
0500-0600	Radio for Peace Int'l, Costa Rica	7375 USB
0500-0600	Radio Thailand, Bangkok	4830 9655 11905
0500-0600	Spanish Foreign Radio, Madrid	9630
0500-0600	Voice of America-Africa Service	3990 6035 7280 9540 9575
0500-0600	Voice of America-Middle East Service	3980 5995 6140 7170 7200 11785 15205
0500-0600	Voice of Nigeria, Lagos	7255
0500-0600	WHRI, Noblesville, Indiana	7315 9495
0500-0600	S-F WMLK Bethel, Pennsylvania	9465
0500-0600	WRNO New Orleans, Louisiana	6185
0500-0600	WWCR, Nashville, Tennessee	7520
0500-0600	WYFR, Okeechobee, Florida	5985 11580 17640 15566
0510-0530	M-A Radio Botswana	3356 4830 7255
0530-0600	Radio Austria International, Vienna	6155 13730
0530-0600	Radio Romania Int'l, Bucharest	15340 15380 17720 17745 17790 21665
0530-0600	M-F NBC Windhoek, Namibia	3270
0530-0600	UAE Radio Dubai	15435 17830 21700
0545-0600	Radio New Zealand, Wellington	9855/17675
0555-0600	Voice of Malaysia, Kuala Lumpur	6175 9750 15295

PROGRAMSSundays

0505 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
 0513 Radio Australia: Back Page. See S 0310.
 0530 BBC: Financial Review. A look back at the financial week.
 0530 Radio Australia: Interaction. Nick Kaye explores the experiences of multicultural Australia.
 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
 0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.

Mondays

0506 Christian Science Monitor (Europe, Africa, NE Asia): Encore. See M 0106.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Waveguide. How to hear the BBC better.
 0530 Radio Australia: Music/Information. See S 0330.
 0534 Christian Science Monitor (Europe, Africa, NE Asia): Letterbox. See M 0134.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
 0548 Christian Science Monitor (Europe, Africa, NE Asia): Religious Article. See M 0148.

Tuesdays

0506 Christian Science Monitor: One Norway Street. See M 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Education Focus. See S 1530.
 0534 Christian Science Monitor: Letterbox. See M 0134.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0548 Christian Science Monitor: Religious Article. See M 0148.

0134.

0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.



The BBC's Tim Llewellyn has been covering the Middle East off and on for the past twenty years.

0548 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

0506 Christian Science Monitor: Curtain Call. See T 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Education Focus. See S 1530.
 0534 Christian Science Monitor: Letterbox. See M 0134.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0548 Christian Science Monitor: Religious Article. See M 0148.

Thursdays

0506 Christian Science Monitor: One Norway Street. See M 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: AgriNews. See T 1530.
 0534 Christian Science Monitor: Letterbox. See M 0134.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0548 Christian Science Monitor: Religious Article. See M 0148.

Fridays

0506 Christian Science Monitor: One Norway Street. See M 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Lane's Company. See T 1430.
 0534 Christian Science Monitor: Letterbox. See M 0134.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0548 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

0505 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 1113.
 0530 BBC: Financial News. See M 2310.
 0530 Radio Australia: Arts Roundabout. The arts in Australia, past and present.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.

0600 UTC

[1:00 AM EST/10:00 PM PST]

FREQUENCIES

0600-0645	Radio For Peace, Int., Costa Rica	7375 USB
0600-0650	CBU, Vancouver, British Columbia	6160
0600-0650	Deutsche Welle, Köln, W. Germany	11765 13790 15185 17875
0600-0650	Radio Pyongyang, North Korea	15180 15230
0600-0700	ABC Brisbane, Australia	9660
0600-0700	ABC Domestic Network, Australia	15425
0600-0700	BBC World Service, London, England	5975 6180 6195 7120 7150 9410 9580 9600 9640 12095 15070 15245
0600-0700	CFCF, Montreal, Quebec, Canada	6005
0600-0700	CFCN, Calgary, Alberta, Canada	6030
0600-0700	CFRB, Toronto, Ontario, Canada	6070
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130
0600-0700	Christian Science World Svc, Boston	9455 9840 11705 13720
0600-0700	CKWX, Vancouver, British Columbia	6080
0600-0700	HCJB, Quito, Ecuador	15155 17875
0600-0700	Radio Australia, Melbourne	11880 13700 13705 15240 15465 17630 21525 21740
0600-0700	Radio Havana Cuba	5965 11760 11820
0600-0700	Radio Moscow North American Svc.	9635 12050 13605 15180
0600-0700	Radio Moscow World Service	15280 17690 21690 21790
0600-0700	Radio New Zealand, Wellington	9855/17675

0600-0700	SIBC Solomon Islands	5020 9545
0600-0700	Radio Tonga, Kingdom of Tonga	5030v
0600-0700	M-A Vatican Radio	6248 9645 11740 ML
0600-0700	Voice of America-Africa Service	3990 6035 6080 6125
0600-0700	Voice of America-Middle East Serv	7280 9530 9540 9575
0600-0700	Voice of Hope, Lebanon	3980 5965 5995 6060
0600-0700	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0600-0700	Voice of the Mediterranean, Malta	9765
0600-0700	WHRI, South Bend, Indiana	7315 9495
0600-0700	S-F WMLK Bethel, Pennsylvania	9465
0600-0700	WYFR, Okeechobee, Florida	5985 6065 7355 13760
0618-0700	M-F Radio Canada International, Montreal	6050 6150 7155 9740
		9760 11840 17840
0630-0700	Radio Finland, Helsinki	11755 9560 6120
0630-0700	BRT, Brussels, Belgium	13675 11695
0630-0700	Radio Polonia, Warsaw, Poland	6135 7270 15120 9675
0630-0700	Swiss Radio International, Berne	15430 17570 21770
0630-0700	Radio Tirana, Albania	9500 7205
0630-0700	Vatican Radio African Service	17710 17730 21650
0645-0700	GBC Radio, Accra, Ghana	6130
0645-0700	HCJB, Quito, Ecuador	9610 11835 (alt 6050)
0645-0700 A	Radio for Peace Int., Costa Rica	7375 USB
0645-0700	Radio Romania Int'l, Bucharest	11810 11940 15335 17720
		17805 21665

PROGRAMSSundays

0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0630 BBC: Jazz for the Asking. A jazz music request show.
 0630 Radio Australia: Fine Music Australia. See S 0230.

Mondays

0606 Christian Science Monitor: News Focus. See M 0006.
 0630 BBC: Feature. See S 1401.

0630 Radio Australia: This Australia. See S 0430.
 0634 Christian Science Monitor: Home Forum. See M 0034.

Tuesdays

0606 Christian Science Monitor: News Focus. See M 0006.
 0630 BBC: Rock/Pop Music. A series on various musical subjects.
 0630 Radio Australia: Music of Radio Australia. See S 1113.
 0634 Christian Science Monitor: Kaleidoscope. See M 1634.

Wednesdays

0606 Christian Science Monitor: News Focus. See M 0006.
 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
 0630 Radio Australia: Pacific Women. Conversations with Pacific women about their lives and concerns.
 0634 Christian Science Monitor: Kaleidoscope. See M 1634.

Thursdays

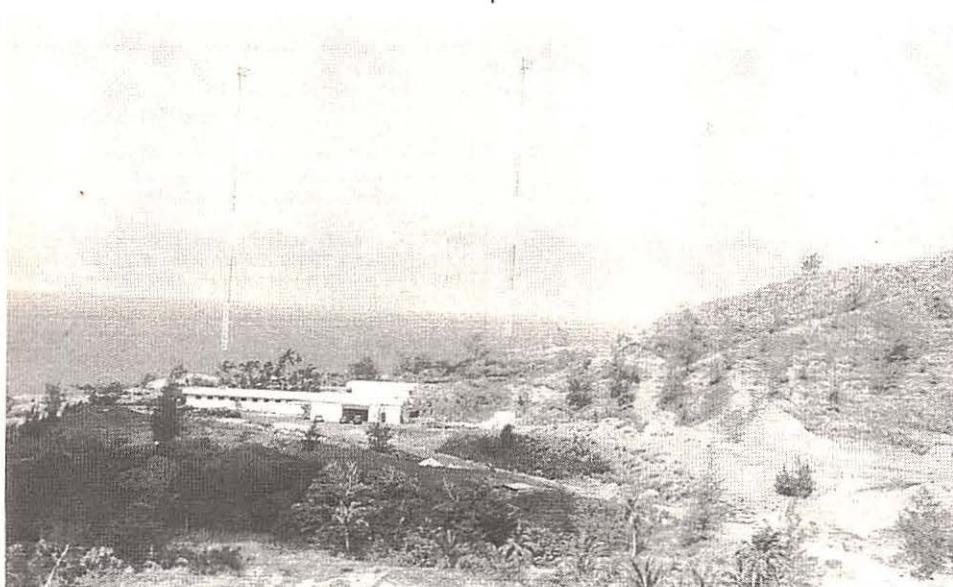
0606 Christian Science Monitor: News Focus. See M 0006.
 0630 BBC: Talk (except January 10th: Poems by Post). See M 2315.
 0630 Radio Australia: At Your Request. See S 0130.
 0634 Christian Science Monitor: Kaleidoscope. See M 1634.
 0645 BBC: The Farming World. See H 0145.

Fridays

0606 Christian Science Monitor: News Focus. See M 0006.
 0630 BBC: Meridian. See W 0630.
 0630 Radio Australia: Music of Radio Australia. See S 1113.
 0634 Christian Science Monitor: Kaleidoscope. See M 1634.

Saturdays

0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0630 BBC: Meridian. See W 0630.
 0630 Radio Australia: Just Out. See M 0030.



A picture of the transmitting site for KTWR in Guam

0700 UTC**[2:00 AM EST/11:00 PM PST]****FREQUENCIES**

0700-0710	Sierra Leone Brdcstng Svc., Freetown	3316
0700-0715	Radio Romania Int'l, Bucharest	11810 11940 15335 17720 17805 21665
0700-0725	BRT Brussels, Belgium	21815 11695 6035
0700-0730	Radio Australia, Melbourne	11880 13705 15240 15465 17630 21525 21740 21775
0700-0730	Radio Tirana, Albania	11835 9500
0700-0750	Radio Pyongyang, North Korea	15340 17795
0700-0800	ABC Brisbane, Australia	9660
0700-0800	BBC World Service, London	5975 7150 9410 9600 9640 9760 11940 12095 15070 15280 15360 15400 21715
0700-0800	CBU, Vancouver, British Columbia	6160
0700-0800	CFCF, Montreal, Quebec, Canada	6005
0700-0800	CFCN, Calgary, Alberta, Canada	6030
0700-0800	CFRB, Toronto, Ontario, Canada	6070
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130
0700-0800	Christian Science World Svc, Boston	9455 9840 11705 13720 15225 17780
0700-0800	GBC Radio, Accra, Ghana	6130
0700-0800	HCJB, Quito, Ecuador	9610 11835 15270
0700-0800	KNLS, Anchor Point, Alaska	9785
0700-0800	Radio Havana Cuba	11835
0700-0800	Radio Japan, Tokyo	17765 17810 17890 21590 21690

0700-0800	Radio Korea, Seoul	7550 13670
0700-0800	Radio Moscow World Service	15280 17690 21690 21790
0700-0800	Radio New Zealand, Wellington	9855
A	Radio for Peace Int'l, Costa Rica	7375 USB
	Solomon Islands Broadcasting Co.	5020 9545
	TWR Monte Carlo	9480
	Voice of Free China, Taiwan	5950 6130 9745 11925
	Voice of Hope, Lebanon	6280
	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
	Voice of the Mediterranean, Malta	9725
	WHRI Noblesville, Indiana	7315 9495
	WYFR, Okeechobee, Florida	6065 7355 13760 15566
	ZBC-1, Zimbabwe	7283
	HCJB, Quito, Ecuador(S. Pacific Sv.)	6130 9745 11925
	ABC, Alice Springs, Australia	2310 (ML)
	ABC, Katherine, Australia	2485
	ABC, Tennant Creek, Australia	2325 (ML)
	Radio Austria Int'l, Vienna	21490 15410 13730 6155
	Radio Australia, Melbourne	6035 11880 13705 15240
	HCJB Quito, Ecuador	17630 21525 21775
	KTWR, Agana Guam	9745 11925
	Radio Netherlands, Hilversum	15200
	Radio Prague Int'l, Czechoslovakia	9630 15560
	Radio Sofia, Bulgaria	17840 21705
	Swiss Radio Int'l European Service	11720 15160 17825
		3985 6165 9535

0800 UTC**[3:00 AM EST/12:00 AM PST]****FREQUENCIES**

0800-0803	Radio Pakistan	17555 21575
0800-0810	Sierra Leone Brdcstng Co., Freetown	3316
0800-0825	Radio Finland, Helsinki	17800 21550
0800-0825	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0800-0825	Radio Netherlands Int'l, Hilversum	9630 15560
0800-0830	Radio Australia, Melbourne	13705 15160 15240 17630 17750 17795 21525 21775
0800-0830	Voice of Islam, Dacca, Bangladesh	15195 11705
0800-0850	Radio Pyongyang, North Korea	15180 15230
0800-0900	ABC Brisbane, Australia	9660
0800-0900	ABC, Alice Springs, Australia	2310 (ML)
0800-0900	ABC, Katherine, Australia	2485
0800-0900	ABC, Perth, Australia	15425
0800-0900	ABC, Tennant Creek, Australia	2325 (ML)
0800-0900	BBC, London	15280 9640 12095 15070 15360 21715 15400 9410 21660
0800-0900	CBN, St. John's, Newfoundland, Can	6160
0800-0900	CBU, Vancouver, British Columbia	6160
0800-0900	CFCF, Montreal, Quebec, Canada	6005
0800-0900	CFCN, Calgary, Alberta, Canada	6030
0800-0900	CFRB, Toronto, Ontario, Canada	6070
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130
0800-0900	Christian Science World Svc	9455 9530 9840 13720 15225 15610
0800-0900	CKWX, Vancouver, British Columbia	6080
0800-0900	HCJB, Quito, Ecuador	6130 9610 11835
0800-0900	HCJB, Quito, Ecuador (alt pro)	9745 11925 15270

0800-0900	KNLS, Anchor Point, Alaska	11715
0800-0900	KTWR, Guam	15200
0800-0900	Radio Australia (Southwest Pacific)	6020 6035 6080 9710
0800-0900	Radio Havana, Cuba	11835
0800-0900	Radio Moscow World Service	15280 17690 21690 21790
A	Radio for Peace Int'l, Costa Rica	7375 USB
	Solomon Islands Broadcasting Co.	5020
	Trans World Radio, Monte Carlo	9480
	Voice of Hope, Lebanon	6280
	Voice of Indonesia, Jakarta	11753 11785
	Voice of Nigeria, Lagos	7255
	WHRI, South Bend, Indiana	7315 7355
	Radio Korea, Seoul	9570 13670
	S Italian Radio Relay Svc, Milan	9815
	A.S. Radio New Zealand, Wellington	9855
	M-F Radio Netherlands Int'l, Hilversum	15190
	Radio Australia, Melbourne	9580 15240 17630 17750 21525 21775
	Radio Finland, Helsinki	21550 17800
	Radio Netherlands Int'l, Hilversum	9630 17575 21485
	Swiss Radio International, Berne	9560 13685 17670 21695
	Radio Tikhii Okean, Vladivostok	4485 5940 7210 7320
	Voice of Greece, Athens	15625 17535
	KTWR, Agana, Guam	15210

0900 UTC**[4:00 AM EST/1:00 AM PST]****FREQUENCIES**

0900-0920	ABC, Perth, Australia	15425
0900-0925	BRT Brussels, Belgium	9925
0900-0925	Radio Netherlands Int'l, Hilversum	9630 17575 21485
0900-0930	KTWR Agana Guam	15200
0900-0930	Radio Australia (Southwest Pacific)	6020 6035 6080 9710
0900-0930	Radio Australia, Melbourne	5995 9580 9760 17715
0900-0945	S Italian Radio Relay Svc, Milan	9815
0900-0950	Deutsche Welle, Köln, West Germany	6160 9565 11740 15410 17780 17820 21600 21650 21680
0900-1000	ABC, Alice Springs, Australia	2310 (ML)
0900-1000	ABC Brisbane, Australia	9660
0900-1000	ABC, Katherine, Australia	2485
0900-1000	ABC, Tennant Creek, Australia	2325 (ML)
0900-1000	S Adventist World Radio, Portugal	9670
0900-1000	BBC World Service, London, England	5975 9740 11750 12095 15070 15190 15360 15400 17640 17705 17790 17885 21470 21660 21715
0900-1000	CFCF, Montreal, Quebec, Canada	6005
0900-1000	CFCN, Calgary, Alberta, Canada	6030
0900-1000	CFRB, Toronto, Ontario, Canada	6070
0900-1000	CHNS, Halifax, Nova Scotia, Canada	6130
0900-1000	Christian Science World Svc, Boston	9455 9530 9840 11980 13720 15610
0900-1000	CKWX, Vancouver, British Columbia	6080

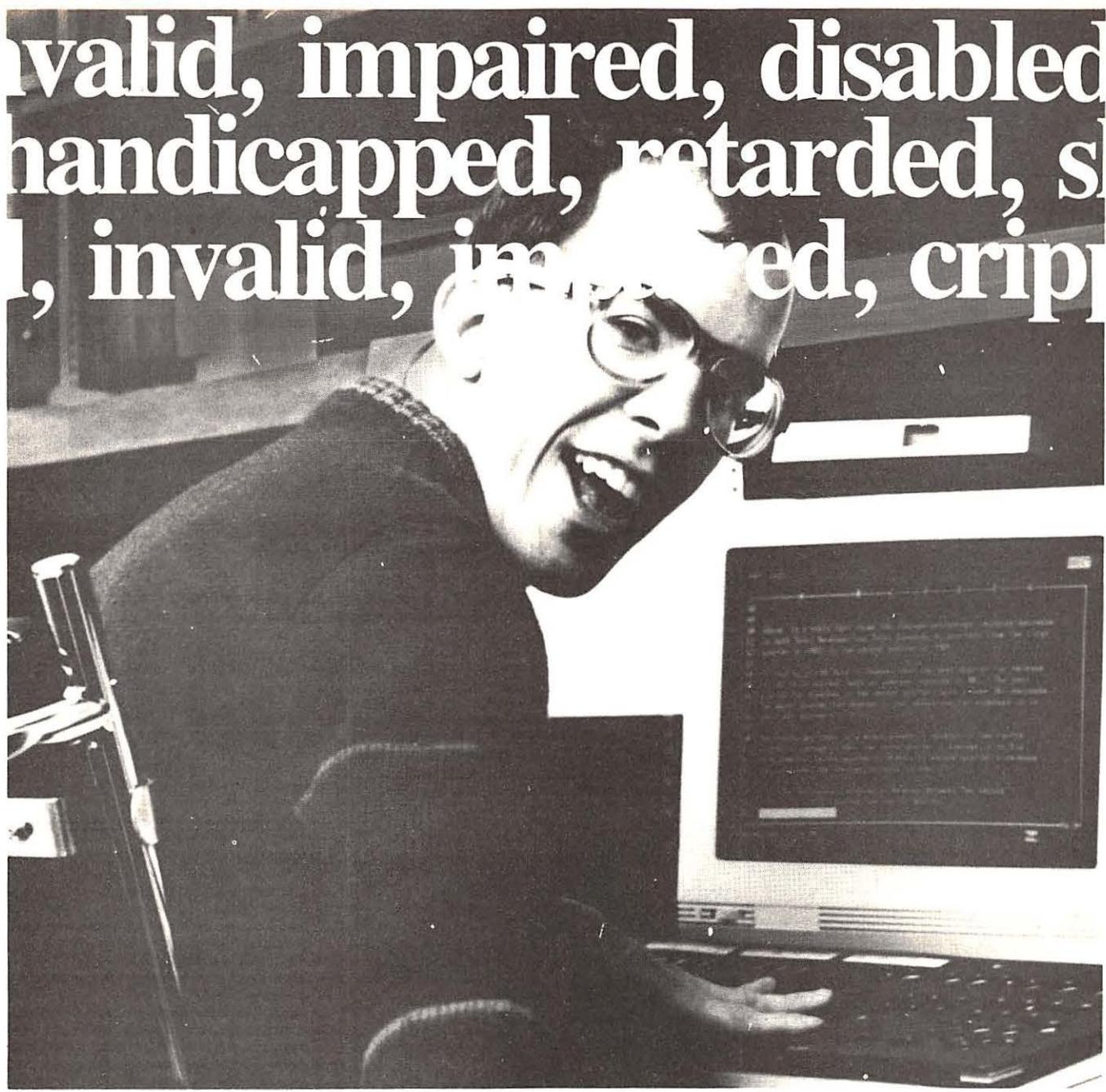
0900-1000	FEBC Radio Int'l, Philippines	11845
0900-1000	HCJB, Quito, Ecuador	6130
0900-1000	HCJB, Quito, Ecuador(alt pro)	9745 11925
0900-1000	KTWR, Agana, Guam	11805
0900-1000	Radio Beijing, China	11755 15440 17710
0900-1000	S Radio Bhutan, Thimpu	5023V
0900-1000	Radio Japan Australian Svc., Tokyo	15270 17890
0900-1000	Radio Japan General Service, Tokyo	11840 21610
0900-1000	Radio Moscow World Service	15280 17690 21690 21790
0900-1000	Radio New Zealand, Wellington	9855
0900-1000	A Radio for Peace Int., Costa Rica	7375 USB
0900-1000	Solomon Islands Broadcasting Co.	5020
0900-1000	Voice of Hope, Lebanon	6280
0900-1000	Voice of Nigeria, Lagos	7255
0900-1000	WHRI, Noblesville, Indiana	7315 7355
0910-0940	M,W,H,A,S Radio Ulan Bator, Mongolia	11850 12015
0920-1000	ABC, Perth, Australia	6140
0930-1000	British Forces Broadcasting Svc, UK	15205 17695 21735
0930-1000	CBN, St. John's, New Foundland	6160
0930-1000	KTWR, Agana, Guam	11805
0930-1000	Radio Afghanistan, Kabul	4940 9635 17655 21600
0930-1000	Radio Australia, Melbourne	5995 9580 9655 9760 17715 21775 21825
0930-0955	RRI Surabaya, Jawa Timur, Indonesia	2377

1000 UTC**[5:00 AM EST/2:00 AM PST]****FREQUENCIES**

1000-1015	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110
1000-1025	BRT Brussels, Belgium	21810 26050
1000-1030	Radio Afghanistan, Kabul	4940 9635 17655 21600
1000-1030	Radio Australia, Melbourne	5995 9580 9655 17715 21775
1000-1030	A Radio for Peace Int., Costa Rica	7375 USB
1000-1030	Swiss Radio International, Berne	9560 13685 17670 21695
1000-1030	Voice of Vietnam, Hanoi	9840 15010
1000-1100	ABC Brisbane, Australia	9660
1000-1100	ABC, Alice Springs, Australia	2310 (ML)
1000-1100	ABC, Katherine, Australia	2485
1000-1100	ABC, Perth, Australia	9610
1000-1100	ABC, Tennant Creek, Australia	2325 (ML)
1000-1100	All India Radio, New Delhi	15010 15335 17387 17865 21735
1000-1100	BBC World Service, London, England	9410 9740 9750 12095 15070 15190 15360 15420 17705 17790 17885 21660
1000-1100	CBN, St. John's, Nfld, Canada	6160
1000-1100	CFCF, Montreal, Quebec, Canada	6005
1000-1100	CFCN, Calgary, Alberta, Canada	6030
1000-1100	CFRB, Toronto, Ontario, Canada	6070
1000-1100	CHNS, Halifax, Nova Scotia, Canada	6130
1000-1100	Christian Science World Svc, Boston	9455 9495 9530 11980 13625 13720 (+11705 A,S)
1000-1100	CKWX, Vancouver, British Columbia	6080
1000-1100	FEBC Radio Int'l, Philippines	11845
1000-1100	HCJB, Quito, Ecuador	9745 11925

1000-1100	KHBN Guam	9830 ML
1000-1100	KSDA, Guam	13720
1000-1100	KTWR, Agana, Guam	11805
1000-1100	Radio Baghdad, Iraq	11860
1000-1100	Radio Beijing, China	11755 15440 17710
1000-1100	Radio Korea, Seoul	15575
1000-1100	Radio Moscow World Service	11840 17690 21690 21790
1000-1100	Solomon Islands Broadcasting Co.	5020
1000-1100	Voice of America-Caribbean Service	9590 11915 15120
1000-1100	Voice of America-Pacific Service	5985 11720 15425
1000-1100	WHRI, South Bend, Indiana	7315 7355
1000-1100	WYFR, Okeechobee, Florida	5950
1000-1100	Radio Korea, Seoul	7275 11740
1015-1030	S Italian Radio Relay Svc, Milan	9815
1030-1100	Adventist World Radio, Forli, Italy	7230
1030-1100	Radio Austria Int'l, Vienna	15450 21490
1030-1100	Radio Australia, Melbourne	5995 9580 9655 21775
1030-1045	Radio Budapest, Hungary	15160 15220 11925 9835 9585 6110
1030-1100	Radio Korea, Seoul	11715
1030-1100	Radio Netherlands Int'l, Hilversum	6020 11890
1030-1100	Radio Tanzania	5985 6105 7165
1030-1100	UAE Radio Dubai	15320 15435 17865 21605
1030-1100	M-A Vatican Radio	6248 9645 11740
1040-1050	Voice of Greece, Athens	15625 17535
1045-1100	Radio Budapest, Hungary	7220 9585 9835 11910
1050-1100	Radio Finland, Helsinki	15400 21550

invalid, impaired, disabled
handicapped, retarded, s
, invalid, impaired, crip



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NCF
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Cristina
Foundation

1100 UTC

[6:00 AM EST/3:00 AM PST]

FREQUENCIES

1100-1115	Azad Kashmir Radio, Pakistan	7268	4980	3665
1100-1115	Radio Finland, Helsinki	15400	21550	
1100-1120	Radio Pakistan	17565	21520	
1100-1125	HCJB Quito, Ecuador	9745	11925	
1100-1125	Radio Netherlands Int'l, Hilversum	6020	11890	
1100-1130	Adventist World Radio, Forli, Italy	7230		
	Don't forget about this early morning broadcast from Israel. It can propagate quite well in the winter.			
1100-1130	Kol Israel, Jerusalem	11585	15650	17575 17590 21790
1100-1130	Radio Australia, Melbourne	5995	6020	6035 6080 9580 9655 9710 11910 15465 21825
1100-1130	Radio Mozambique, Maputo	11835	11818	9525
1100-1130	Solomon Islands Broadcasting Co.	5020		
1100-1130	Swiss Radio International, Berne	13635	15570	17830 21770
1100-1130	Voice of Vietnam, Hanoi	9840	15010	
1100-1150	Deutsche Welle, Köln, West Germany	15410	17765	17800 21600
1100-1150	Radio Pyongyang, North Korea	9977	11735	
1100-1200	ABC, Alice Springs, Australia	2310	(ML)	
1100-1200	Adventist World Radio, Costa Rica	9725	11870	
1100-1200	All India Radio, Northeast Svc	7190		
1100-1200	ABC, Brisbane, Australia	9660		
1100-1200	ABC, Katherine, Australia	2485		
1100-1200	ABC, Perth, Australia	9610		
1100-1200	ABC, Tennant Creek, Australia	2325	(ML)	
1100-1200	BBC World Service, London, England	9410	9515	9740 9750 11775 12095 15070 15360
1100-1200	CBN, St. John's, Newfoundland, Can	6160		
1100-1200	CFCF, Montreal, Quebec, Canada	6005		
1100-1200	CFCN, Calgary, Alberta, Canada	6030		
1100-1200	CFRB, Toronto, Ontario, Canada	6070		
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130		



Warren Moulton of Radio Australia's English Service

PROGRAMSSundays

- 1105 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1113 Radio Australia: Music of Radio Australia. Selections by Radio Australia announcers.
 1115 BBC: Short Story. Brief tales written by BBC listeners (except January 6th: Seeing Stars, a monthly look at astronomy).
 1130 BBC: The Ken Bruce Show. See S 0030.
 1130 Radio Australia: One World. Michael Wagner reports on environmental issues of the Asian/Pacific region.

Mondays

- 1106 Christian Science Monitor: Encore. See M 0106.
 1113 Radio Australia: Music of Radio Australia. See S 1113.
 1115 BBC: Health Matters. New developments in the world of medical science and fitness.
 1130 BBC: Composer of the Month. See M 0230.
 1130 Radio Australia: Land and Culture. Indigenous issues in Australia presented by Trevor Robertson.
 1134 Christian Science Monitor: Letterbox. See M 0134.
 1148 Christian Science Monitor: Religious Article. See M 0148.

Tuesdays

- 1106 Christian Science Monitor: One Norway Street. See M 2306.
 1113 Radio Australia: Music of Radio Australia. See S 1113.
 1115 BBC: Waveguide. See M 0530.
 1125 BBC: Book Choice. See S 0225.
 1130 BBC: Megamix. See T 0030.

Thursdays

- 1106 Christian Science Monitor: One Norway Street. See M 2306.
 1113 Radio Australia: Music of Radio Australia. See S 1113.
 1115 BBC: The Farming World. See H 0145.
 1130 BBC: Drama. A half-hour of the world's finest in radio theater.
 1130 Radio Australia: AgriNews. See T 1530.
 1134 Christian Science Monitor: Letterbox. See M 0134.
 1148 Christian Science Monitor: Religious Article. See M 0148.

Fridays

- 1106 Christian Science Monitor: One Norway Street. See M 2306.
 1113 Radio Australia: Music of Radio Australia. See S 1113.
 1115 BBC: Global Concerns. See F 0145.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Australia: Education Focus. See S 1530.
 1134 Christian Science Monitor: Letterbox. See M 0134.
 1148 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

- 1105 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1113 Radio Australia: Music of Radio Australia. See S 1113.
 1115 BBC: Worldbrief. See F 2315.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Australia: Matters of Faith. See M 0430.

1200 UTC

[7:00 AM EST/4:00 AM PST]

FREQUENCIES

1200-1215	Radio Korea, Seoul	9650	9750	1200-1300	CFRB, Toronto, Ontario	6070
1200-1225	All India Radio Northeast Svc	7190	ML	1200-1300	CHNS, Halifax, Nova Scotia, Canada	6130
1200-1210	Radio Finland, Helsinki	15400	21550	1200-1300	Christian Science World Service	9495 9895 11930 11980 13625 13720 (+21780 A.S.)
1200-1225	Radio Netherlands Int'l, Hilversum	5955	6020	1200-1300	CKWX, Vancouver, British Columbia	6080
		17575	21480	1200-1300	HCJB, Quito, Ecuador	11740 15115 17890
1200-1225	Voice of Islamic Republic of Iran	9575	9705	1200-1300	KHBN Guam	9830 ML
		11825		1200-1300	Radio Beijing, China	9530 11600 11660 15450
1200-1230	Radio Australia, Melbourne	5995	6020	1200-1300	Radio Brasilia	11745
1200-1230 A.S.	Radio Norway International, Oslo	21735	25730	1200-1300	Radio Jordan, Amman	13655
1200-1230	Radio Romania Int'l, Bucharest	15380	17720	1200-1300	Radio Moscow World Service	11840 17690 21690 21790
1200-1230	Radio Tashkent, Uzbekistan	7325	9715	1200-1300	Radio Tanzania	5985 6105 7165
		17740		1200-1300	SBC Singapore	11940
1200-1230	Radio Thailand	11905	9655	1200-1300	Trans World Radio, Bonaire	11815 15345
1200-1230 M,W,H,A,S	Radio Ulan Bator, Mongolia	11850	12025	1200-1300	Voice of America-East Asia Service	6110 9760 11715 15155 15425 9530
1200-1230	Vatican Radio, Vatican City	17865	21515	1200-1300	WHRI, Noblesville, Indiana	9465 11790
1200-1300	ABC, Alice Springs, Australia	2310	(ML)	1200-1300	WWCR Nashville, Tennessee	15690
1200-1300	ABC, Brisbane, Australia	9660		1200-1300	WYFR, Okeechobee, Florida	5950 6015 11580 17750
1200-1300	ABC, Katherine, Australia	2485		1215-1225	Radio Bayrak, Northern Cyprus	6150
1200-1300	ABC, Perth, Australia	9610		1225-1300	All India Radio Northeast Svc	3255 ML
1200-1300	ABC, Tennant Creek, Australia	2325	(ML)	1230-1245	Radio Korea, Seoul	9650 9750
1200-1300	Adventist World Radio, Costa Rica	9725	11870	1230-1300	S Italian Radio Relay Svc, Milan	9815 (ML)
1200-1300	BBC World Service, London, England	5965	6195	1230-1300	Radio Australia, Melbourne	5995 6020 6035 6080
		11775	12095	1200-1300	Radio Bangladesh, Dacca	9580 11720 11910 15465
		17705	17790	1230-1300	Radio France International, Paris	15195 17817
		21660	21710	1230-1300	Radio Sweden, Stockholm	9805 11670 15155 15195
1200-1300	CBU, Vancouver, British Columbia	6160		1235-1245	Voice of Greece, Athens	17650 21635 21645
1200-1300	CFCF, Montreal, Quebec, Canada	6005				15190 21570 17740
1200-1300	CFCN, Calgary, Alberta, Canada	6030				15625 15650 17535

PROGRAMS**Sundays**

- 1201 BBC: Play of the Week. See S 0101.
 1205 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1227 Radio Australia: Tattslootto Results. And tonight's winning numbers are...
 1230 Radio Australia: Soundabout. Young, contemporary music from Australia and around the world.

Mondays

- 1206 Christian Science Monitor: News Focus. See M 0006.
 1215 BBC: Quiz. Test your wits in a game show of the airwaves.
 1230 Radio Australia: Soundabout. See S 1230.
 1234 Christian Science Monitor: Home Forum. See M 0034.
 1245 BBC: Sports Roundup. See S 1345.

Tuesdays

- 1206 Christian Science Monitor: News Focus. See M 0006.
 1215 BBC: Multitrack 1: Top 20. See M 2330.
 1230 Radio Australia: Soundabout. See S 1230.
 1234 Christian Science Monitor: Kaleidoscope. See M 1634.
 1245 BBC: Sports Roundup. See S 1345.

Wednesdays

- 1206 Christian Science Monitor: News Focus. See M 0006.
 1215 BBC: New Ideas. See M 1615.
 1227 Radio Australia: Tattslootto Results. See S 1227.
 1230 Radio Australia: Soundabout. See S 1230.
 1234 Christian Science Monitor: Kaleidoscope. See M 1634.
 1235 BBC: Talk. See M 1635.
 1245 BBC: Sports Roundup. See S 1345.



Announcer Armando Solano at work in the Radio for Peace International studio.

Thursdays

- 1206 Christian Science Monitor: News Focus. See M 0006.
 1215 BBC: Multitrack 2. See W 2330.
 1230 Radio Australia: Soundabout. See S 1230.
 1234 Christian Science Monitor: Kaleidoscope. See M 1634.
 1245 BBC: Sports Roundup. See S 1345.

Fridays

- 1206 Christian Science Monitor: News Focus. See M 0006.
 1215 BBC: Feature. Topical programming on

various subjects.

- 1230 Radio Australia: This Australia. See S 0430.
 1234 Christian Science Monitor: Kaleidoscope. See M 1634.
 1245 BBC: Sports Roundup. See S 1345.

Saturdays

- 1205 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1215 BBC: Multitrack 3. See F 2330.
 1227 Radio Australia: Tattslootto Results. See S 1227.
 1230 Radio Australia: Ring the Bells. See A 0330.
 1245 BBC: Sports Roundup. See S 1345.

1300 UTC

[8:00 AM EST/5:00 AM PST]

FREQUENCIES

1300-1315	Radio Jordan, Amman	13655	1300-1400	FEBC Radio Int'l, Philippines	11850
1300-1325	Radio Finland, Helsinki	15400 21550	1300-1400	HCJB, Quito, Ecuador	11740 17890 25950 USB
1300-1330	Radio Australia, Melbourne	5995 6020 6035 6080 9580 11720 11910 15465 21825	1300-1400	KHBN Guam	9830 ML
1300-1330	Radio Canada Int'l (China relay)	11955 15210	1300-1400	S Italian Radio Relay Svc, Milan	9815
1300-1330 A,S	Radio Norway International, Oslo	9585 9590	1300-1400	Radio Australia Middle East Svc	17630 21775
1300-1330	Radio Tirana, Albania	11855 9500	1300-1400	Radio Beijing, China	9530 11600 11660 11850
1300-1330	Radio Yugoslavia, Belgrade	17740 21555 25795	1300-1400	M-F Radio Canada Int'l, Montreal	9635 11855 17820
1300-1330	Swiss Radio Int'l European Service	3985 6165 9535	1300-1400	Radio Korea, Seoul	9570
1300-1330 S	Trans World Radio, Bonalre	15345 11815	1300-1400	Radio Moscow World Service	11840 17690 21690 21790
1300-1350	Radio Pyongyang, North Korea	9325 9345	1300-1400	Radio Romania Int'l, Bucharest	11940 15365 17850 21665
1300-1400	ABC, Alice Springs, Australia	2310	1300-1400 A,S	Radio Tanzania	5985 6105 7165
1300-1400	ABC, Brisbane, Australia	9660	1300-1400	Voice of America-East Asia Service	6110 9760 11715 15155
1300-1400	ABC, Katherine, Australia	2485			15425
1300-1400	ABC, Perth, Australia	9610	1300-1400	WHRI, Noblesville, Indiana	9465 11790
1300-1400	ABC, Tenant Creek, Australia	2325 (ML)	1300-1400	WWCR, Nashville, Tennessee	15690
1300-1400	Adventist World Radio, Costa Rica	9725 11870	1300-1400	WYFR, Okeechobee, Florida	5950 6015 11550 11580
1300-1400	All India Radio Northeast Svc	3255 ML	1315-1400	Radio Jordan, Amman	9560
1300-1400	BBC World Service, London, England	5965 9410 9515 9740 11775 12095 15070 17640 17705 17790 17885 21470 21660 21710	1315-1400	Radio Tikhii Okean, Vladivostok	5015
1300-1400	CBC Northern Quebec Service, Can	9625	1330-1400	All India Radio, New Delhi	9565 11760 15335
1300-1400	CBN, St. John's, Newfoundland	6160	1330-1400	British Forces Broadcasting Svc, UK	15195 17695 21735
1300-1400	CBU, Vancouver, British Columbia	6160	1330-1400	M-SBRT Brussels, Belgium	21820
1300-1400	CFCF, Montreal, Quebec, Canada	6005	1330-1400	M-F BRT Brussels, Belgium	21815
1300-1400	CFCN, Calgary, Alberta, Canada	6030	1330-1400	Laotian National Radio	7116v
1300-1400	CFRB, Toronto, Ontario, Canada	6070	1330-1400	Radio Austria International, Vienna	15430
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130	1330-1400	Radio Australia, Melbourne	5995 6020 6035 6080
	The morning is a good time to curl up and listen to the CSMWS		1330-1400		9580
1300-1400	Christian Science World Service	9495 9650 9895 11930 11980 13625 (+21780 A,S)	1330-1345 A,S	Radio Finland, Helsinki	21550 15400
1300-1400	CKWX, Vancouver, British Columbia	6080	1330-1400	Radio Tashkent, Uzbekistan	7325 9715 11785 15460
			1330-1400	Swiss Radio International, Berne	17740
			1330-1400 A	Trans World Radio, Bonaire	11815 15345
			1330-1400	UAE Radio, Dubai	15435 17865 21605
			1330-1400	Voice of Turkey, Ankara	17785
			1330-1400	Voice of Vietnam, Hanoi	9840 12020 15010
			1345-1400	Vatican Radio	7250 9645 11740

PROGRAMS

Sundays

1305 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1313 Radio Australia: Sports Report. Results and reports on sporting events from the world over.
 1330 Radio Australia: Fine Music Australia. See S 0230.
 1345 BBC: Sports Roundup. The day's sports news.

Mondays

1306 Christian Science Monitor: Encore. See M 0106.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Andy Kershaw's World of Music. See M 0215.
 1330 Radio Australia: Music of Radio Australia. See S 1113.
 1334 Christian Science Monitor: Letterbox. See M 0134.
 1345 BBC: Personal View. See S 0445.
 1348 Christian Science Monitor: Religious Article. See M 0148.
 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.

Tuesdays

1306 Christian Science Monitor: One Norway Street. See M 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Music of Radio Australia. See

S 1113.
 1334 Christian Science Monitor: Letterbox. See M 0134.

1345 BBC: Pop Music. See S 0430.
 1348 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

1306 Christian Science Monitor: Curtain Call. See T 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Development '91. Aid and development issues.
 1330 Radio Australia: Just Out. See M 0030.
 1334 Christian Science Monitor: Letterbox. See M 0134.

1348 Christian Science Monitor: Religious Article. See M 0148.

1405 BBC: Outlook. See M 1405.

Thursdays

1306 Christian Science Monitor: One Norway Street. See M 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Music of Radio Australia. See S 1113.
 1334 Christian Science Monitor: Letterbox. See M 0134.

1345 BBC: Folk in Britain or Jazz Now and Then. A look at folk or jazz music on the British Isles.

1348 Christian Science Monitor: Religious Article. See M 0148.

Fridays

1306 Christian Science Monitor: One Norway Street. See M 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Quote...Unquote. Nigel Rees presents the long-running game show about the origins of various quotes.
 1330 Radio Australia: Music of Radio Australia. See S 1113.
 1334 Christian Science Monitor: Letterbox. See M 0134.

1348 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

1305 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1313 Radio Australia: Sports Report. See S 1313.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Music of Radio Australia. See S 1113.
 1345 BBC: Good Books. See M 0315.



1400 UTC

[9:00 AM EST/6:00 AM PST]

FREQUENCIES

1400-1415	Azad Kashmir Radio, Pakistan	7268	4980	3665	1400-1500 S	Radio Canada Int'l, Montreal	11955	17820
1400-1430	ABC, Alice Springs, Australia	2310	(ML)		1400-1500	Radio Japan General Service, Tokyo	11815	11865
1400-1430	ABC, Tennant Creek, Australia	2325	(ML)		1400-1400	Radio Jordan, Amman	9560	
1400-1430	Radio Australia, Melbourne	5995	6020	6035 6060	1400-1500	Radio Moscow World Service	11840	17690 21690 21790
		6080	7215	9580		Try to listen to Radio RSA anyway, even if they don't want you to.		
1400-1430	Radio Juba, Sudan	9540	/9550		1400-1500	Radio RSA, Johannesburg	9555	11925 17835
1400-1430	Radio France International, Paris	11925	21780		1400-1500	Radio Sta. Peace & Progress, Moscow	11870	15180 17635 17805 (from 1330 add: 15435 15480 15560 17835)
1400-1430	Radio Polonia, Warsaw, Poland	6095	7285		1400-1500 A,S	Radio Tanzania	5985	6105 7165
1400-1430	Radio Sweden, Stockholm	11905	17740		1400-1500	Voice of America-East Asia Service	6110	9760 15155 15425
1400-1430	Radio Tirana, Albania	9500	11895		1400-1500	Voice of America-South Asia Service	7125	9645 9760 15205
1400-1430	Swiss Radio Int'l, Berne	6165	9535	12030	1400-1500	Voice of the Mediterranean, Malta	11925	
1400-1500	ABC, Brisbane, Australia	9660			1400-1500	Voice of Nigeria, Lagos	7255	
1400-1500	ABC, Katherine, Australia	2485			1400-1500	WHRI, Noblesville, Indiana	9465	15105
1400-1500	ABC, Perth, Australia	9610			1400-1500	WWCR, Nashville, Tennessee	15690	
1400-1500	All India Radio, New Delhi	9565	11760	15335	1400-1500	WYFR, Okeechobee, Florida	5950	6015 11580 13695
1400-1500	All India Radio Northeast Svc	3255	ML		1405-1500	WYFR, Taiwan	11550	
1400-1500	BBC World Service, London, England	9410	11750	12095 15070	1405-1430	Radio Finland, Helsinki	15185	21550 11820
		17640	17705	17790 17880	1415-1500	M-A Radio Bhutan	5023V	
1400-1500	CBC Northern Quebec Service, Can	9625			1415-1425	Radio Nepal, Katmandu	5005	7165 (alt. 3230)
1400-1500	CBN, St. John's, Newfoundland	6160			1430-1500 F	ABC, Tennant Creek, Australia	2325 (ML)	
1400-1500	M-ACBU, Vancouver, British Columbia	6160			1430-1500	Radio Austria International, Vienna	6155	11780 13730 21490
1400-1500	CFCF, Montreal, Quebec, Canada	6005			1430-1500	Radio Australia, Melbourne	5995	6020 6036 6060
1400-1500	CFCN, Calgary, Alberta, Canada	6030			1430-1500	Radio Netherlands Int'l, Hilversum	5995	13770 15150 17575
1400-1500	CFRB, Toronto, Ontario	6070			1430-1500	Voice of Hope, Lebanon	6280	
1400-1500	CHNS, Halifax, Nova Scotia, Canada	6130			1430-1500	Voice of Myanmar (Burma)	5990v	
1400-1500	Christian Science World Service	9530	11980	13625 13720	1445-1500	Radio Korea, Seoul	7275	
1400-1500	CKWX, Vancouver, British Columbia	6080			1445-1500 M,W,H,A,SRadio Ulan Bator, Mongolia	9795	13780	
1400-1500	FEBC Radio Int'l, Philippines	11850						
1400-1500	HCJB, Quito, Ecuador	11740	17890	25950 USB				
1400-1500	KHBN Guam	9830	ML					
1400-1500	Radio Australia Middle East Svc	17630	21775					
1400-1500	Radio Beijing, China	11815	11850	15165				

PROGRAMSSundays

1401 BBC: Feature. Topical programming on various subjects.
 1405 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1430 BBC: Anything Goes. Bob Holness presents a variety of odd recordings.
 1430 Radio Australia: Communicator. The latest developments in the media and communications world.

Mondays

1405 BBC: Outlook. See M 1405.
 1406 Christian Science Monitor: News Focus. See M 0006.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Lane's Company. Terry Lane talks with people from all walks of life.
 1434 Christian Science Monitor: Kaleidoscope. See M 1634.
 1445 BBC: Instruments of the Orchestra. See M 0145.

Wednesdays

1406 Christian Science Monitor: News Focus. See M 0006.
 1425 Radio Australia: Stock Exchange Report. Financial news from Sydney and other exchanges.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Music of Radio Australia. See S 1113.
 1434 Christian Science Monitor: Home Forum. See M 0034.
 1445 BBC: They Made Our World. See S 0215.

1445 Radio Australia: Word of Mouth. Oral histories of Australians.
 1455 BBC: Book Choice. See S 0225.

Tuesdays

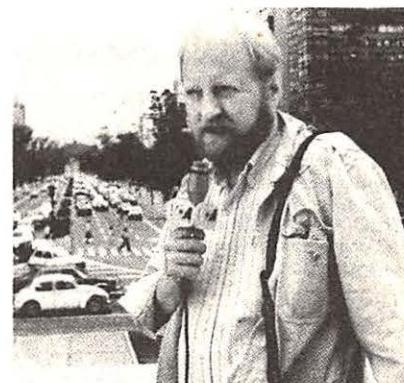
1406 Christian Science Monitor: News Focus. See M 0006.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1433 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Innovations. Desley Blanch reports on Inventions and Innovative practices.
 1434 Christian Science Monitor: Kaleidoscope. See M 1634.
 1445 BBC: Business Matters. A weekly survey of commercial and financial news.

Thursdays

1405 BBC: Outlook. See M 1405.
 1406 Christian Science Monitor: News Focus. See M 0006.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Monitor. A look at the impact of science and technology on society.
 1434 Christian Science Monitor: Kaleidoscope. See M 1634.
 1445 BBC: Recording of the Week. See M 0545.

Fridays

1405 BBC: Outlook. See M 1405.
 1406 Christian Science Monitor: News Focus. See M 0006.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 BBC: Off the Shelf. See M 0430.
 1430 Radio Australia: Science File. See W 1130.
 1434 Christian Science Monitor: Kaleidoscope. See



Voice of America correspondent Gary Treadway (Miami Bureau) in Mexico City

M 1634.

1445 BBC: The Learning World. See M 0445.

Saturdays

1401 BBC: John Peel. See T 0330.
 1405 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1430 BBC: Sportsworld. The weekly sports magazine.
 1430 Radio Australia: Interaction. See S 0530.

1500 UTC

[10:00 AM EST/7:00 AM PST]

FREQUENCIES

1500-1515 M,W,H,A,SRadio Ulan Bator, Mongolia	9795 13780	1500-1600 T-S KNLS, Anchor Point, Alaska	11715 (or 9750)
1500-1515 WYFR, Taiwan	11550	1500-1600 KTWR, Agana, Guam	11650
1500-1525 Radio Netherlands Int'l, Hilversum	5955 13770 15150 17575	1500-1600 KUSW, Salt Lake City, Utah	15590
	17605	1500-1600 Radio Australia, Melbourne	5995 6020 6035 6060
1500-1530 Radio Romania Int'l, Bucharest	11775 11940 15250 15335	1500-1600 S Radio Canada Int'l, Montreal	11955 17820
	17720 17745	1500-1600 Radio Jordan, Amman	9560
1500-1530 Radio Sweden, Stockholm	17740 11905	1500-1600 Radio Moscow World Service	11840 17670 21690 21790
1500-1530 A,S Radio Tanzania	5985 6105 7165	1500-1600 Radio RSA, Johannesburg S. Africa	7230 15270
1500-1530 M-AVatican Radio, Vatican City	6248 7250 9645 11740 ML	1500-1600 Voice of America-Middle East Service	9700 15205 15260 21530
1500-1540 FEBA, Seychelles	11865	1500-1600 Voice of America-South Asia Service	6110 7125 9645 9700
1500-1550 Deutsche Welle, Köln, W. Germany	9735 11965 17765 21600	1500-1600 Voice of Lebanon	9760 15205 15260 9350
1500-1550 Radio Pyongyang, North Korea	9325 9640 9977 11760	1500-1600 Voice of the Mediterranean, Malta	6280
1500-1555 Radio Beijing, China	11815 15165	1500-1600 Voice of Myanmar (Burma)	11925
1500-1600 F ABC, Alice Springs, Australia	2310 (ML)	1500-1600 Voice of Nigeria, Lagos	5990v
1500-1600 ABC, Perth, Australia	9610	1500-1600 Radio Korea, Seoul	7255
1500-1600 F ABC, Tennant Creek, Australia	2325 (ML)	1500-1600 WHRI, Noblesville, Indiana	5975 9870
1500-1600 All India Radio Northeast Svcs	3255 ML	1500-1600 WWCR, Nashville, Tennessee	15105 (+ 9465 M-F)
1500-1600 BBC World Service, London, England	9410 11750 11775 12095	1500-1600 WYFR, Okeechobee, Florida	15690
	15070 15260 17640 17705	1500-1600 Voice of Lebanon	5950 11830 13695 11580
	17780 21470 21660 21710	1515-1530 RCI European News Svc, Montreal	17750
1500-1600 CBC Northern Quebec Service, Can	9625 (ML)	1515-1530 9555 11915 11935 15325	21545 (M-A add: 13650
1500-1600 CBN, St. John's, Newfoundland	6160		15315 17820)
1500-1600 CBU, Vancouver, British Columbia	6160	1530-1600 Radio Omdurman, Sudan	11635 9550/9540
1500-1600 CFCF, Montreal, Quebec, Canada	6005	1530-1600 Radio Sofia, Bulgaria	11680 15310 17825
1500-1600 CFCN, Calgary, Alberta, Canada	6030	1530-1600 Radio Sweden, Stockholm	17880 21500 21655
1500-1600 CHNS, Halifax, Nova Scotia, Canada	6130	1530-1600 Radio Tanzania	5985 6105 7165 9684
1500-1600 Christian Science World Service	9530 11980 13625 13720	1530-1600 Radio Tirana, Albania	11835 9500
1500-1600 CKWX, Vancouver, British Columbia	6080	1530-1600 Swiss Radio International, Berne	13685 15430 17830 21630
1500-1600 CFRB, Toronto, Ontario	6070	1540-1555 M-AFEBA, Seychelles	11865
1500-1600 FEBA, Seychelles	9590 15330	1545-1600 Radio Pakistan	21740 21480 17895 17580
1500-1600 FEBC Radio Int'l, Philippines	11850	1545-1600 Vatican Radio, Vatican City	15605 13665
1500-1600 HCJB, Quito, Ecuador	11740 17890 25950 USB	1555-1600 M-AFEBA, Seychelles	11715 15090 17870
1500-1600 KHBN Guam	9830 ML		11865

PROGRAMS

Sundays

- 1505 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: Concert Hall. Recordings of classical music selections (except January 27th: International Recital, the annual series of live classical music concerts).
 1530 Radio Australia: Education Focus. Trevor Robertson presents education issues of the Asian/Pacific region.

Mondays

- 1506 Christian Science Monitor: Encore. See M 0106.
 1513 Radio Australia: Pacific Sunrise. Business and export development in the Pacific basin.
 1515 BBC: Feature/Drama. See M 0101.
 1530 Radio Australia: Points of Law. Geraldine Coutts reports on the law and society in Oceania.
 1534 Christian Science Monitor: Letterbox. See M 0134.
 1548 Christian Science Monitor: Religious Article. See M 0148.

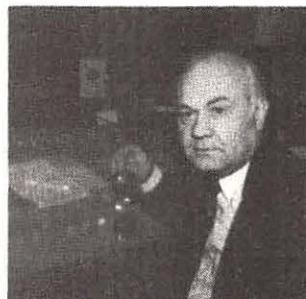
Tuesdays

- 1506 Christian Science Monitor: One Norway Street. See M 2306.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents requests, the Record of the Month, and the album charts.
 1530 Radio Australia: AgriNews. News about agriculture of the Asian/Pacific region, with

Denis Gibbons.
 1534 Christian Science Monitor: Letterbox. See M 0134.
 1548 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

- 1506 Christian Science Monitor: Curtain Call. See T 2306.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: Talk (except January 9th: Poems by Post). See M 2315.
 1530 BBC: Smash of the Day. A comedy series (except January 2nd: Two Cheers for 1990, a satirical look at the year just past).
 1530 Radio Australia: Matters of Faith. See M 0430.
 1534 Christian Science Monitor: Letterbox. See M 0134.
 1548 Christian Science Monitor: Religious Article. See M 0148.



Vladimir Srebnitsky is the chief producer of Radio Moscow

Thursdays

- 1506 Christian Science Monitor: One Norway Street. See M 2306.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: Music for a While with Richard Baker. Classical music with the well-known broadcaster.
 1530 Radio Australia: Business Horizons. See T 1130.
 1534 Christian Science Monitor: Letterbox. See M 0134.
 1548 Christian Science Monitor: Religious Article. See M 0148.

Fridays

- 1506 Christian Science Monitor: One Norway Street. See M 2306.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: Music Review. See H 2315.
 1530 Radio Australia: Land and Culture. See M 1130.
 1534 Christian Science Monitor: Letterbox. See M 0134.
 1548 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

- 1505 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1513 Radio Australia: Music of Radio Australia. See S 1113.
 1515 BBC: Sportsworld. See A 1430.
 1530 Radio Australia: One World. See S 1130.

1600 UTC

[11:00 AM EST/8:00 AM PST]

FREQUENCIES

1600-1610 M,A FEBA, Mahe, Seychelles	11865	1600-1700 Radio Baghdad, Iraq	11800 13745 (+ 6060 until 1630)
1600-1610 Radio Lesotho	4800	1600-1700 Radio Beijing, China	11860 9570 15110 15130
1600-1610 Vatican Radio, Vatican City	6248 7250 9645 11740	1600-1700 S Radio Canada Int'l, Montreal	11955 17820 6175 11705 12015 15360
1600-1615 Azad Kashmir Radio, Pakistan	7268 4980 3665	1600-1700 Radio France International, Paris	17620 17795 17845 17850
1600-1615 Radio Tanzania	5985 6105 7165 9684	1600-1700 Radio Moscow World Service	7110 9655 9840 11630
1600-1630 All India Radio Northeastern Svcs	3255 ML		11890 12005 12010 12015
1600-1630 Radio Jordan, Amman	9560		15375 15540 17600 17670
1600-1630 Radio Pakistan	7287 13665 15605 17554 21670		17710 21585 21630 21740 (+11840 via Cuba)
1600-1630 A,S Radio Norway International, Oslo	15220 25730	1600-1700 Radio RSA, Johannesburg	7230 15270
1600-1630 Radio Polonia, Warsaw, Poland	6135 9540	1600-1700 Trans World Radio-Swaziland	15135
1600-1630 M-F Radio Portugal, Lisbon	21530	1600-1700 Voice of America-Africa Service	7195 9575 11920 15410 15445 15580 15600 17785
1600-1630 Radio Sofia, Bulgaria	11680 15310 17825	1600-1700 Voice of America-Middle East Service	17800 17870
1600-1630 Voice of Vietnam, Hanoi	9840 15010 12020	1600-1700 Voice of America-Asia Service	3980 9700 15205 15260 7125 9645 9700 9760
1600-1640 UAE Radio, Dubai	11795 15320 15435 21605		15205 15260 15395
1600-1650 Deutsche Welle, Köln, W. Germany	6170 7225 15105 15595 17825 21680	1600-1700 Voice of Nigeria, Lagos	7255
1600-1700 F ABC, Alice Springs, Australia	2310 (ML)	1600-1700 WHRI, Noblesville, Indiana	9465(M-F) 13760(M-A) 15105(S) 21840(A,S)
1600-1700 ABC, Perth, Australia	9610	1600-1700 WIN, Red Lion, Pennsylvania	15295
1600-1700 F ABC, Tennant Creek, Australia	2325 (ML)	1600-1700 WRNO New Orleans, Louisiana	15420
1600-1700 BBC World Service, London, England	9410 11775 12095 15070 15260 17640 17705 21660	1600-1700 WWCR, Nashville, Tennessee	15690
1600-1700 CBC Northern Quebec Service, Can	9625 (ML)	1600-1700 WYFR, Okeechobee, Florida	11830 13695 17750 15566 11580 17612 21525 21615
1600-1700 CBN, St. John's, Newfoundland	6160	1610-1620 M-F Radio Botswana	3356 4830 7255
1600-1700 CBU, Vancouver, British Columbia	6160	1610-1625 M FEBA, Mahe, Seychelles	11865
1600-1700 CFCF, Montreal, Quebec, Canada	6005	1615-1620 Vatican Radio, Vatican City	9645 11740
1600-1700 CFCN, Calgary, Alberta, Canada	6030	1615-1630 Radio Budapest, Hungary	15160 15220 11910 9835 9585 7220
1600-1700 CFRB, Toronto, Ontario	6070	1615-1630 Radio Korea, Seoul, South Korea	9870
1600-1700 CHNS, Halifax, Nova Scotia, Canada	6130	1630-1655 M-A BR Brussels, Belgium	17580 21810
1600-1700 Christian Science World Service	9530 13625 13745 21640	1630-1700 Radio Austria Int'l, Vienna	11780 13730 21490
1600-1700 CKWX, Vancouver, British Columbia	6080	1630-1700 Radio Netherlands, Hilversum	15570 6020
1600-1700 KSDA, Guam	11980	1645-1700 M-F Radio Botswana	3356 4830 7255
1600-1700 KTWR, Agana, Guam	11650 11910 13720	1650-1700 Radio New Zealand, Wellington	15485
1600-1700 KUSW, Salt Lake City, Utah	15590		
1600-1700 Radio Australia, Melbourne	5995 6020 6035 6080 7215 9580 9710 9770		

PROGRAMSSundays

1605 Christian Science Monitor: The Sunday Service. A religious service from the First Church of Christ, Scientist, in Boston.
 1615 BBC: Feature. See S 0230.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1645 BBC: Letter from America. See S 0545.
 1645 Radio Australia: Sports Report. See S 1313.

Mondays

1606 Christian Science Monitor: News Focus. See M 0006.
 1615 BBC: New Ideas. A look at new products and technological developments.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1634 Christian Science Monitor: Kaleidoscope. News features and special segments on a variety of topics.
 1635 BBC: Talk. A short talk on any subject under the sun.
 1645 BBC: The World Today. News analysis on a selected location or event in the news.
 1645 Radio Australia: Sports Report. See S 1313.

Tuesdays

1606 Christian Science Monitor: News Focus. See M 0006.
 1615 BBC: Omnibus. A half-hour program on practically any topic.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1634 Christian Science Monitor: Kaleidoscope. See

M 1634.

1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.

Wednesdays

1606 Christian Science Monitor: News Focus. See M 0006.
 1615 BBC: Rock/Pop Music. See T 0630.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1634 Christian Science Monitor: Kaleidoscope. See M 1634.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.

Thursdays

1606 Christian Science Monitor: News Focus. See M 0006.
 1615 BBC: Assignment. See H 0230.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1634 Christian Science Monitor: Kaleidoscope. See M 1634.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Report. See S 1313.

Fridays

1606 Christian Science Monitor: News Focus. See M 0006.
 1615 BBC: Science in Action. The latest in scientific developments.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1634 Christian Science Monitor: Home Forum. See M 0034.
 1645 BBC: The World Today. See M 1645.



Unni Westlund of the Radio Norway International staff

1645 Radio Australia: Sports Report. See S 1313.

Saturdays

1605 Christian Science Monitor: Herald of Christian Science. See S 0005.
 1615 BBC: Sportsworld. See A 1430.
 1630 Radio Australia: Music of Radio Australia. See S 1113.
 1645 Radio Australia: Sports Report. See S 1313.

1700 UTC**[12:00 PM EST/9:00 AM PST]****FREQUENCIES**

1700-1725	Radio Netherlands, Hilversum	15570 6020	1700-1800	Radio RSA, Johannesburg	7230 15270 17790
1700-1730 A,S	Radio Norway	9655	1700-1800	Radio Surinam Int'l (via Brazil)	17750 (ML)
1700-1730	Radio Prague Int'l, Czechoslovakia	5930 6055 7345 11990	1700-1800	Voice of America-Africa Service	7195 9575 11920 15410
1700-1730	Radio Sweden, Stockholm	6065 9615			15445 15580 15600 17785
1700-1750	Radio Bras, Brazil	15265			17800 17870
1700-1750	Radio Pyongyang, North Korea	9325 9640 9977 11760	1700-1800	Voice of America-Middle East Service	3980 6040 9700 9760
1700-1800	BBC World Service, London	9410 11775 12095 15070			11760 15205 15260
		15260 15310 15400 17640	1700-1800	Voice of America-South Asia Service	7125 9645 9700 15395
		17695 21470 21660	1700-1800	WHRI, Noblesville, Indiana	13760 15105
1700-1800	CBC, Montreal	9625 (ML)	1700-1800	WINB, Red Lion, Pennsylvania	15295
1700-1800	Christian Science World Service	13625 21640	1700-1800	S-F WMLK Bethel, PA	9465
		(+17555 & 15610 A,S)	1700-1800	WRNO, New Orleans, Louisiana	15420
1700-1800	ELWA, Monrovia, Liberia	11800	1700-1800	WWCR, Nashville, Tennessee	15690
1700-1800	KUSW Salt Lake City, Utah	15590	1700-1800	WYFR, Okeechobee, Florida	11830 13695 15440 17750
1700-1800	Radio Australia, Melbourne	5995 6020 6035 6080	1715-1730	Radio Canada Int'l, Montreal	17885 21615
		7215 7240 9580 9710	1715-1800	Radio Pakistan	5995 7235 13650 15325
		9770 11855	1730-1740	Radio Bayrak, Northern Cyprus	17820 21545
1700-1800	Radio Baghdad, Iraq	11860	1730-1755	BRT Brussels, Belgium	6150
1700-1800	Radio Beijing, China	9570 11575 15225	1730-1800	Radio Romania Int'l, Bucharest	11695 5910
1700-1800	Radio Japan, Tokyo	9695 11815 11865	1730-1800	Radio Sofia, Bulgaria	15340 15365 17805 17860
1700-1800	Radio Korea, Seoul	15575	1730-1800	Radio Sta. Peace & Progress, USSR	11680 15310 17825
1700-1800	Radio Moscow Africa Service	11690 11745 11775 11850			11775 11850 11910 11980
		11960 15230 15330 15415			12055 12065 15330 15480
		15535 15585 17565 17570			15585 17565 17615 17635
		17595 17615 17655 21565	1730-1800	Radio Tirana, Albania	17655 21715
		21630 21715	1730-1800	Radio Truth	7155 9480
1700-1800	Radio Moscow World Service	11840 12010 12015 15150		(Clandestine Intended for Zimbabwe)	5015
		15265 17585 17600 17670		(May be off the air at this time.)	
		17695 21585 25375	1730-1800	Swiss Radio Int'l, Berne	9535
		(+11840 via Cuba)	1730-1800	Vatican Radio African Service	17710 17730 21650
1700-1800	Radio New Zealand, Wellington	15485			
1700-1800	Radio Pyongyang, North Korea	9325 9640 9977 11760			

1800 UTC**[1:00 PM EST/10:00 AM PST]****FREQUENCIES**

1800-1815	Kol Israel	11585 11655	1800-1900v	Radio Tanzania	5985 6105 7165 9684
1800-1830	Radio Canada Int'l, Montreal	13670 15260 17820	1800v-1900	SLBC World Service, Sri Lanka	9720 15120
1800-1830 A,S	Radio Norway International, Oslo	17755	1800-1900	Voice of America-Africa Service	7195 9575 11920 15410
1800-1830	Radio Sweden, Stockholm	6065 7265			15445 15580 15600 17785
1800-1830	Voice of Ethiopia, Addis Ababa	9660	1800-1900	Voice of America-Middle East Service	17800 17870 21485
1800-1830	Voice of Vietnam, Hanoi	15010 12010 9840	1800-1900	WHRI, Noblesville, Indiana	15205
1800-1845	All India Radio, New Delhi	11935 15360	1800-1900	WINB, Red Lion, Pennsylvania	13760 17830
1800-1845	Trans World Radio, Swaziland	15210	1800-1900	WRNO, New Orleans, Louisiana	15295
1800-1855	Radio Mozambique, Maputo	9618 4855 3265	1800-1900	WWCR, Nashville, Tennessee	15420
1800-1900 F	ABC, Alice Springs, Australia	2310 (ML)	1800-1900	WYFR, Okeechobee, Florida	15690
1800-1900 F	ABC, Tenant Creek, Australia	2325 (ML)			11830 13695 15440 17885
1800-1900	BBC World Service, London	9410 12095 15070 17640	1815-1900	Radio Bangladesh, Dacca	21500
1800-1900	CBC Montreal	9625	1830-1845	Radio Finland, Helsinki	12032 15255
1800-1900	CBN, St. John's, Newfoundland	6160	1830-1845	Radio Prague Int'l, Czechoslovakia	11755 9550 6120
1800-1900	CBU, Vancouver, British Columbia	6160	1830-1855	BRT Brussels, Belgium	6055 7345
1800-1900	CFCF, Montreal, Quebec, Canada	6005	1830-1855	Radio Polonia, Warsaw, Poland	5910 11695 13675
1800-1900	CFCN, Calgary, Alberta, Canada	6030			5995 6135 7125 7285
1800-1900	CFRB, Toronto, Ontario	6070	1830-1900	Radio Afghanistan, Kabul	9525 11840
1800-1900	CHNS, Halifax, Nova Scotia, Canada	6130	1830-1900 A,S	Radio Canada Int'l, Montreal	9635 15510 17745
1800-1900	Christian Science World Service	11650 13625 21640	1830-1900	Radio Netherlands Int'l, Hilversum	13670 15260 17820
1800-1900	CKWX, Vancouver, British Columbia	6080	1830-1900	Radio Netherland Int'l, Hilversum	6020 15560 17605 21685
1800-1900	KVOH, Rancho Simi, California	17775	1830-1900	Radio Riyadh, Saudi Arabia	9705 9720
1800-1900	KUSW, Salt Lake City, Utah	15590	1830-1900	Radio Tirana, Albania	7120 9480
1800-1900 S-F	WMLK Bethel, Pennsylvania	9465	1830-1900	Swiss Radio International, Berne	9885 11955
1800-1900	Radio Australia, Melbourne	5995 6020 6035 6080	1830-1900	Swiss Radio Int'l European Service	3985 6165 9535
1800-1900	Radio Havana Cuba	15345	1840-1850 M-A	Voice of Greece, Athens	11645 12105 15625
1800-1900	Radio Moscow World Service	11765 11840 11890 13605	1845-1855vIRR	Africa No. 1, Gabon	15475
1800-1900	Radio New Zealand, Wellington	15485	1845-1900	All India Radio, New Delhi	7412 9665 9910 11620
1800-1900	Radio RSA, Johannesburg, S. Africa	17765 15270 7230			11860 11935
1800-1900 A,S	Radio for Peace Int'l, Costa Rica	13630 21566			

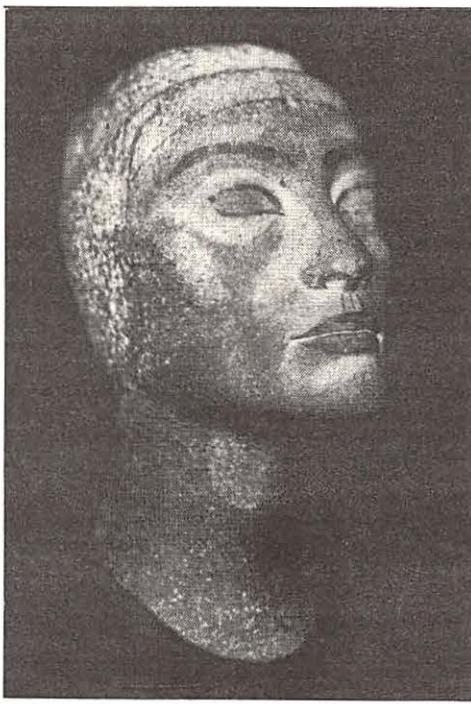
1900 UTC

[2:00 PM EST/11:00 AM PST]

FREQUENCIES

1900-1910	Radio Tanzania	5985	6105	7165	9684
1900-1910	M-A Vatican Radio	6190	6248	7250	9645
		17710	17730	21650	
1900-1915	Sierra Leone Brdcstng Co., Freetown	3316			
1900-1920	Radio Botswana	3356	4830		
1900-1920v	Radio Omdurman, Sudan	11635			
1900-1925	Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930	Radio Afghanistan, Kabul	9635	15510	17745	
1900-1930	M-F Radio Budapest, Hungary	15160	11910	9835	9585
		7220	6110		
1900-1930	M-F Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930	Radio Japan General Service, Tokyo	11850	11865	15270	
1900-1930	A,S Radio Norway International, Oslo	15220	15235	21705	25730
1900-1930	M-F Radio Portugal, Lisbon	11740	15250	21530	
1900-1930	Radio Sofia, Bulgaria	11680	15310	17825	
1900-1930	Voice of Vietnam, Hanoi	9840	12020	15010	
1900-1945	All India Radio, New Delhi	7412	9665	9910	11620
		11860	11935		
1900-1950	Deutsche Welle, Koln, W. Germany	11785	11810	13790	15390
		17810			
1900-2000	BBC World Service, London, England	9410	12095	15070	15400
1900-2000	CBC, Montreal	9625			
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec, Canada	6005			
1900-2000	CFCN, Calgary, Alberta, Canada	6030			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000	Christian Science World Service	11650	13625	21640	
		(+17555 & 15610 A,S)			
		(+21780 M-F)			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	ELWA, Monrovia, Liberia	11800			
1900-2000	GBC Radio, Accra, Ghana	6130			
1900-2000	HJCB European Service, Ecuador	17790	21480	25950ssb	
1900-2000	KVOH, Rancho Simi, California	17775			
1900-2000	KUSW, Salt Lake City, Utah	15590			
1900-2000	Radio Algiers, Alger	9510	9685	15215	
1900-2000	Radio Australia, Melbourne	5995	6020	6035	6080
		7205	7215	7240	9580
		11855			

1900-2000	Radio Beijing, China	9440	11515
1900-2000	Radio Moscow African Svc	11960	12035 15230 15520
		17655	(In English & Zulu)
1900-2000	Radio Moscow World Service	11765	11840 12010 12060
		13605	15405 15540 15580
		17570	17670 21630 21740
		21630	
1900-2000	Radio New Zealand, Wellington	15485	
1900-2000	A,S Radio for Peace Int'l, Costa Rica	13630	21566
1900-2000	M-F RAE, Buenos Aires, Argentina	15345	
1900-2000	Solomon Islands Broadcasting Co.	5020	
1900-2000	Spanish National Radio, Madrid	11790	15280 15375 15395
1900-2000	Voice of America-Africa Service	7195	15410 15445 15580
		15600	17785 17800 17870
		21485	
1900-2000	Voice of America-Middle East Service	6040	9700 9760 11760
		15205	
1900-2000	Voice of America-Pacific Service	9525	11870 15180
1900-2000	WHRI, Noblesville, Indiana	13760	17830
1900-2000	WINB, Red Lion, Pennsylvania	15295	
1900-2000	S-F WMLK, Bethel, Pennsylvania	9465	
1900-2000	WRNO, New Orleans, Louisiana	15420	
1900-2000	WWCR, Nashville, Tennessee	15690	
1900-2000	WYFR, Okeechobee, Florida	11830	13695 15440 15566
		17612	17885 21615
1920-1930	M-A Voice of Greece, Athens	9395	11645
1930-2000	Radio Austria International, Vienna	5945	6155 12010 13730
1930-2000	A,S Radio Budapest, Hungary	6110	7220 9585 9835
1930-2000	M-F Radio Canada Int'l, Montreal	5995	7235 11945 15325
		17875	
1930-2000	Radio Korea, Seoul	6480	7550 15575
1930-2000	Radio Romania Int'l, Bucharest	5955	9690 9750 11810
1930-2000	Radio Sofia, Bulgaria	11660	11765 15330
1930-2000	M Radio Tallin, Estonia	5925	
1930-2000	Radio Yugoslavia, Belgrade	7215	9660 11735
1930-2000	Voice of the Islamic Republic Iran	6080	n 9022 15084
1935-1955	RAI, Rome, Italy	7275	9710 11800
1940-2000	M,W,H,A,SRadio Ulan Bator, Mongolia	11850	12050
1945-2000	All India Radio, New Delhi	11935	
1945-2000	Radio Korea, Seoul	5975	9870
1950-2000	Vatican Radio	6190	7250 9645



Richard Lane made good use of a stint in the military to do some DXing. QSLs are from Egypt (left), Radio and TV Malaysia Sarawak (above), and Radio Nacional do Brasil.



2000 UTC**[3:00 PM EST/12:00 PM PST]****FREQUENCIES**

2000-2010	M,W,H,A,S Radio Ulan Bator, Mongolia	11850	12050
2000-2010	Sierra Leone Brdcstng.Co.,Freetown	3316	
2000-2010	Vatican Radio, Vatican City	6190	7250 9645
2000-2030	Kol Israel, Jerusalem	11605	11745 12077 15090
		15485	17575
2000-2030	Radio Korea, Seoul	6480	7550 15575
2000-2030	M-F Radio Portugal	15250	
2000-2030	Radio Prague Int'l, Czechoslovakia	5930	6055 7345 11990
2000-2030	Radio Romania Int'l, Bucharest	5955	9690 9750 11810
2000-2030	Voice of the Islamic Republic Iran	6080	9022 15084
2000-2050	Radio Pyongyang, North Korea	6576	9345 9640 9977
2000-2100	M-AABC, Alice Springs, Australia	2310	(ML)
2000-2100	ABC, Katherine, Australia	2485	
2000-2100	M-AABC, Tennant Creek, Australia	2325	(ML)
2000-2100	BBC World Service, London, England	5975	9410 12095 15070
		15260	15400 17755 17760
		17880	
2000-2100	CBC, Montreal	9625	(ML)
2000-2100	CBN, St. John's, Newfoundland	6160	
2000-2100	CBU, Vancouver, British Columbia	6160	
2000-2100	CFCF, Montreal, Quebec, Canada	6005	
2000-2100	CFCN, Calgary, Alberta, Canada	6030	
2000-2100	CFRB, Toronto, Ontario	6070	
2000-2100	CHNS, Halifax, Nova Scotia, Canada	6130	
2000-2100	Christian Science World Service	9455	9495 11980 13625
		13770	15610 17555
2000-2100	CKWX, Vancouver, British Columbia	6080	
2000-2100	KHBN Guam	9820	ML
2000-2100	KUSW, Salt Lake City, Utah	15590	
2000-2100	KVOH, Rancho Simi, California	17775	
2000-2100	ELWA, Monrovia, Liberia	11800	
This and other broadcasts from ELWA is off the air due to fighting in that country. Trivia: I passed a bus the other weekend in Charlotte operated by the same entity that runs ELWA.			

2000-2100	Radio Australia, Melbourne	6020	6035 7205 7215
		7240	9580 11855 13745
		(+6080 & 5995 until 2030)	
2000-2100	Radio Baghdad, Iraq	11860	13660
2000-2100	Radio Beijing, China	9440	9920 11500 11715
		15110	
2000-2100	Radio Havana Cuba	11800	
2000-2100	Radio Moscow Africa Service	11715	11775 11960 12035
2000-2100	Radio Moscow British Service	15520	15535 21630 21740
2000-2100	Radio Moscow World Service	7330	11630 11930 15185
		17695	
2000-2100	Radio New Zealand, Wellington	7315	11630 11670 11805
2000-2100	M-F Radio for Peace Int'l, Costa Rica	11890	12060 13605 15185
2000-2100	Radio Sta. Peace & Progress,USSR	15315	15355 15560 17695
		1970	
2000-2100	Solomon Islands Broadcasting Co.	11980	15260
2000-2100	Voice of America-Africa Service	5020	
		7195	15410 15445 15580
		15600	17785 17800 17870
2000-2100	Voice of Hope, Lebanon	15205	
2000-2100	Voice of Indonesia, Jakarta	6280	
2000-2100	WHRI, Noblesville, Indiana	11753	11785
2000-2100	WINB, Red Lion, Pennsylvania	13760	17830
2000-2100	WRNO, New Orleans, Louisiana	15185	
2000-2100	WWCR, Nashville, Tennessee	15420	
2000-2100	WYFR, Okeechobee, Florida	15690	
		11830	13695 15440 15566
		17612	17885 21525 21615
2005-2100	Radio Damascus, Syria	12085	15095
2030-2100	Radio Netherlands Int'l, Hilversum	9860	13700 15560
2030-2100	Voice of Vietnam, Hanoi	9840	12020 15010
2045-2100	All India Radio, New Delhi	7412	9665 9910 11620
		11715	15265

2100 UTC**[4:00 PM EST/1:00 PM PST]****FREQUENCIES**

2100-2105	Radio Damascus, Syria	12085	15095
2100-2105	Radio New Zealand, Wellington	15485	
2100-2115	Radio Prague Int'l, Czechoslovakia	5930	6055 7345 11990
2100-2125	Radio Netherlands Int'l, Hilversum	9860	13700 15560
2100-2130	Radio Beijing, China	3985	11715 15110
2100-2130	Radio Budapest, Hungary	11910	15160 9835 9585
		7220	6110
2100-2130	Radio Finland, Helsinki	6120	11755 15400
2100-2130	Radio Japan General Service, Tokyo	11815	11835 15270 17765
		17810	17890
2100-2130	Radio Korea, Seoul	15575	7550 6480
2100-2130	M Radio Ljubljana, Yugoslavia	5980	7240 9620
2100-2130 A,S	Radio Norway, Oslo	15165	
2100-2130	Radio Romania Int'l, Bucharest	9690	9750 11810 11940
2100-2130	Radio Sweden, Stockholm	9655	11705
2100-2130	Sierra Leone Brdcstng.Co.,Freetown	3316	
2100-2130	Swiss Radio International, Berne	9885	13635 15525 12035
2100-2130	Vatican Radio	17710	17730 21650
2100-2150	Deutsche Welle, Kolin, West Germany	9670	9765 11785 13780
		15435	
2100-2200v	All India Radio, New Delhi	7412	9665 9910 11620
		11715	15265
2100-2200	BBC World Service, London, England	5975	9410 12095 15070
		15260	15400 17755 17760
		17880	
2100-2200	CBC Montreal	9625	
2100-2200	CBN, St. John's, Newfoundland	6160	
2100-2200	CBU, Vancouver, British Columbia	6160	
2100-2200	CFCF, Montreal, Quebec, Canada	6005	
2100-2200	CFRB, Toronto, Ontario	6070	
2100-2200	CHNS, Halifax, Nova Scotia, Canada	6130	
2100-2200	Christian Science World Service	9455	9495 13625 13770
		15310	15610 17555
2100-2200	CKWX, Vancouver, British Columbia	6080	
2100-2200	ELWA, Monrovia, Liberia	11800	
2100-2200	KHBN Guam	9820	ML

2100-2200	T-A KUSW, Salt Lake City, Utah	15590	
2100-2200	KVOH, Rancho Simi, California	17775	
2100-2200	Radio Angola Int'l Svc, Luanda	3355	9535
2100-2200	Radio Australia, Melbourne	11880	15465 17795
		(until 2130:	7215 13745)
		(from 2130:	15240)
2100-2200	Radio Baghdad, Iraq (to Europe)	13660	
2100-2200	Radio Baghdad, Iraq	11860	
2100-2200	Radio Beijing, China	9920	11500
2100-2200	Radio Cairo, Egypt	9900	
2100-2200	Radio Havana Cuba	11800	17860
2100-2200	Radio Kiev, Ukraine	9865	
2100-2200	Radio Moscow World Service	7115	7150 7315 9685
		11670	11745 11775 11805
		11840	11890 11985 12040
2100-2200	Solomon Islands Broadcasting Co.	5020	9545
2100-2200	Voice of America-Africa Service	7195	15410 15445 15580
		15600	17785 17800 17870
2100-2200	Voice of America-Middle East Service	6040	9700 9760 11760
		15205	11710
2100-2200	Voice of America-Pacific Service	11870	15185 17735
2100-2200	Voice of Hope, Lebanon	6280	
2100-2200	Voice of Turkey, Ankara	9795	
2100-2200	WHRI, Noblesville, Indiana	13760	17830
2100-2200	WINB, Red Lion, Pennsylvania	15185	
2100-2200	WRNO Worldwide, Louisiana	15420	
2100-2200	WWCR, Nashville, Tennessee	15690	
2100-2200	WYFR, Okeechobee, Florida	11830	13695 15566 17612
		17885	21525 21615
2105-2200	Radio New Zealand, Wellington	17675	
2110-2200	Radio Damascus, Syria	12085	15095
2130-2200	HCJB, Quito, Ecuador	15270	17790 25950ssb
2130-2200	Radio Canada Int'l, Montreal	11880	13670 15150 17820
2130-2200	Radio Japan, Tokyo	11815	11835 15270 17765
		17810	21610
2130-2200	Radio Sofia, Bulgaria	11660	11765 15330

2200 UTC

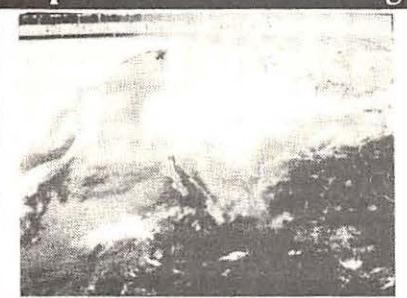
[5:00 PM EST/2:00 PM PST]

FREQUENCIES

2200-2205	Radio Damascus, Syria	12085	15095
2200-2215	M-AABC, Alice Springs, Australia	2310	(ML)
2200-2215	ABC, Tenant Creek, Australia	2325	(ML)
2200-2215	Sierra Leone Brdcstng.C., Freetown	3316	
2200-2215	M-F Voice of America-Caribbean Service	9640	11880 15225
2200-2225	RAI, Rome, Italy	5990	7235 9710
2200-2230	ABC, Katherine, Australia	2485	
2200-2230	All India Radio, New Delhi	7412	9665 9910 11620
2200-2230	BRT Brussels, Belgium	5910	9925
2200-2230	S KGEI, San Francisco, California	15280	
2200-2230	Radio Canada Int'l, Japan relay	11705	
2200-2230 A,S	Radio Norway International, Oslo	15195	
2200-2245	Radio Yugoslavia, Belgrade	5955	9620 11735 15165
2200-2245	WINB Red Lion, PA	15295	
2200-2300	BBC World Service, London, England	5975	6005 6175 6195
		7325	9410 9590 9915
		11750	12095 15070 15260
		15400	17750 17830
2200-2300	CBC Northern Quebec Svc, Canada	9625	
2200-2300	CBN, St. John's, Newfoundland	6160	
2200-2300	CBU, Vancouver, British Columbia	6160	
2200-2300	CFCF, Montreal, Quebec, Canada	6005	
2200-2300	CFCN, Calgary, Alberta, Canada	6030	
2200-2300	CFRB, Toronto, Ontario	6070	
2200-2300	CHNS, Halifax, Nova Scotia, Canada	6130	
2200-2300	Christian Science World Service	9465	15225 15275 15300
		15405	15610 17555
2200-2300	CKWX, Vancouver, British Columbia	6080	
2200-2300	KHBN Guam	9820	ML
2200-2300 T-A	KUSW, Salt Lake City, Utah	15590	
2200-2300	Radio Australia, Melbourne	11880	13605 15240 15465
		17715	17795 21740
2200-2300V	Radio Cairo, Egypt	9900	

2200-2300	Radio Canada Int'l, Montreal	9760	11945
2200-2300	Radio Korea, Seoul	15575	
2200-2300	Radio Moscow North American Svc	11670	11690 11710 11780
		11800	12040 12050 13605
		15315	15355 15425 15580
		15595	17735
2200-2300	Radio Moscow World Service	11615	11745 11775 11985
	(from 2230 add: 7315	15480	17655 17850 17890)
2200-2300	Radio New Zealand, Wellington	17675	
2200-2300	Radio for Peace Int'l, Costa Rica	13630	21566
2200-2300	Radio Sta. Peace & Progress, USSR	9470	9820 11830 11880
		11980	15260
2200-2300	Radio Tonga, Kingdom of Tonga	5030V	
2200-2300	United Arab Emirates R., Abu Dhabi	9600	11985 13605
2200-2300	Voice of America-East Asia Service	7120	9770 11760 15185
		15290	15305 17735 17820
2200-2300	Voice of America-Eur/Pac. Service	9852	11805 15345 15370
		17610	
2200-2300	Voice of Free China, Taiwan	17750	21720
2200-2300	Voice of Hope, Lebanon	6280	
2200-2300	WHRI, Noblesville, Indiana	13760	17830
2200-2300	WRNO Worldwide, Louisiana	15420	
2200-2300	WWCR, Nashville, Tennessee	15690	
2200-2300	WYFR, Okeechobee, Florida	11580	11830 13695 17612
		17885	21525
2205-2230	Vatican Radio, Vatican City	7125	9615 11830 15105
2230-2300	Kol Israel, Jerusalem	9435	11605 11655 11745
		12077	17575
2230-2300	Radio Polonia, Warsaw, Poland	5995	6135 7125 7270
2230-2300	Radio Sofia, Bulgaria	11660	15330
2230-2300	Radio Tirana, Albania	7215	9480
2230-2300	Radio Vilnius, Lithuania	6100	9675
2230-2300	Swiss Radio Int'l, European Service	6190	
2230-2300	Voice of Vietnam, Hanoi	9840	12020 15010
2245-2300	WINB Red Lion, PA	15145	

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SEEKER-PC		File	Mode	Controls	Utility	Setup	HELP	FREQUENCY RANGE SCAN
TIME/DATE	UTC: 02:10:59 Friday							LOCAL: 17:10:59 Thursday 10-26-1990
VFO A:	15.315.000 AM							
VFO B:	9.535.000 AM							
MEM # 98:	9.580.000 AM							
STEP SIZE:	0.001.000							
↑ FREQ UP								SIGNAL LEVEL: 123456789
↓ FREQ DOWN								CUTOFF LEVEL:
AM LSB RTTY								DATABASE: INT-BRD
CW USB FM								
STATUS (OFF/ON)	AUTOSEEK	PRINT LOG	DATABASE LOG	RECORDER				
Evaluator: AUTOSEEK SCANNING ACTIVE								Loops complete: 3
STATUS: ACTIVE								
DESC: 31 meter band								RECORD 271 of 288
START FREQ (MHz): 9.500.000								
SCAN STEP SIZE (MHz): 0.005.000								
MAXIMUM EQL PERIOD (Seconds): 2								
MINIMUM SIGNAL LEVEL (0-9): 7								
TIMES - START: 01:58 END: 04:00 MAX # OF LOOPS (0=Continuous): 5								
LOGGING - TAPE? (Y/N): Y PRINTER? (Y/N): Y DATABASE? (Y/N): Y								

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2300 UTC

[6:00 PM EST/3:00 PM PST]

FREQUENCIES

2300-2310	Sierra Leone BrdcsInq.Co.,Freetown	3316	2300-0000	Radio Japan General Service, Tokyo	11835 15195 17765 17810 21610
2300-2325	Radio Finland, Helsinki	11755 15185	2300-0000	Radio Korea, Seoul	15575
2300-2330	Radio Canada Int'l, Montreal	9755 11730	2300-0000	Radio Luxembourg	6090
2300-2330	Radio Sofia, Bulgaria	11660 11720	2300-0000	Radio Moscow North American Svc.	7150 7315 11710 11780 11800 12040 12050 13605 15315 15355 15425 15580 15595 17735
2300-2330	Radio Vilnius, Lithuania	6100 7400 9865 11790 13645 15455			
2300-2345	WYFR, Okeechobee, Florida	5985 11580 15170	2300-0000	Radio Moscow World Service	12005 15140 15480 15550 15590 17570 17600 17620
2300-2350	Radio Pyongyang, North Korea	11735 13650			17655 17730 17850 21585
2300-0000	Adventist World Radio, Costa Rica	9725 11870			21690 21790
2300-0000	BBC World Service, London, England	5975 6175 6195 7325 9410 9590 9915 11750 15260	2300-0000	Radio for Peace Int'l, Costa Rica	13630 21566
2300-0000	CBC Montreal	9625	2300-0000	Radio Thailand, Bangkok	4830 9655 11905
2300-0000	CBN, St. John's, Newfoundland	6160	2300-0000	Radio Tonga, Kingdom of Tonga	5030V
2300-0000	CBU, Vancouver, British Columbia	6160	2300-0000	United Arab Emirates R.,Abu Dhabi	9600 11985 13605
2300-0000	CFCF, Montreal, Quebec, Canada	6005	2300-0000	Voice of America-East Asia Service	7120 9770 11760 15185 15290 15305 17735 17820
2300-0000	CFCN, Calgary, Alberta, Canada	6030	2300-0000	Voice of Turkey, Ankara	9445 9665 9685 17880
2300-0000	CFRB, Toronto, Ontario	6070	2300-0000	WHRI, Noblesville, Indiana	9495 13760
2300-0000	CHNS, Halifax, Nova Scotia, Canada	6130 15405	2300-0000	WINB, Red Lion, Pennsylvania	15145
2300-0000	Christian Science World Service	9465 15225 15275 15300 15405 15610 17555	2300-0000	WRNO, New Orleans, Louisiana	15420
2300-0000	CKWX, Vancouver, British Columbia	6080	2300-0000	Listen to the talk shows on WWCR and get happy. Late at night.	
2300-0000	KHBN Guam	9820 ML	2305-2355	WWCR, Nashville, Tennessee	15690
2300-0000	KSDA, Guam	15125	2315-0000	Radio Polonia, Warsaw, Poland	5995 6135 7125 7145
2300-0000	T-A KUSW, Salt Lake City, Utah	15590	2315-0000	All India Radio, New Delhi	9535 9910 11715 11745
2300-0000	Radio Australia, Melbourne	11880 13605 15240 15465 17630 17715 17750 17795 21740	2330-0000	Radio Tirana, Albania	6120 9760 11825
2300-0000	Radio Havana Cuba	11930	2345-0000	Voice of Vietnam, Hanoi	9840 12020 15010
					7275

PROGRAMS

Sundays

2305 BBC: Words of Faith. See S 0540.
 2310 BBC: Book Choice. See S 0225.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Letter from America. See S 0545.
 2330 BBC: Feature. See S 1401.
 2330 Radio Australia: Business Report. A look at the day's business developments.

Mondays

2305 BBC: Commentary. Background to the news from a wide range of specialists.
 2306 Christian Science Monitor: One Norway Street. Current affairs reports and features, mainly from the U.S.
 2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Talk A short talk on any subject under the sun (except January 7th: Poems by Post, Michael Rosen presents your poetry requests).
 2330 BBC: Multitrack 1: Top 20. Tim Smith presents what's hot on the British pop music charts.
 2330 Radio Australia: Business Report. See S 2330.
 2334 Christian Science Monitor: Letterbox. See M 0134.
 2348 Christian Science Monitor: Religious Article. See M 0148.

Tuesdays

2305 BBC: Commentary. See M 2305.
 2306 Christian Science Monitor: Curtain Call. A look at music and the people who write and perform it.
 2310 BBC: Financial News. See M 2310.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Concert Hall (except January 29th: International Recital). See S 1515.
 2330 Radio Australia: Business Report. See S 2330.
 2334 Christian Science Monitor: Letterbox. See M 0134.
 2348 Christian Science Monitor: Religious Article. See M 0148.

Wednesdays

2305 BBC: Commentary. See M 2305.
 2306 Christian Science Monitor: One Norway Street. See M 2306.
 2310 BBC: Financial News. See M 2310.
 2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Good Books. See M 0315.
 2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and competitions.
 2330 Radio Australia: Business Report. See S 2330.
 2334 Christian Science Monitor: Letterbox. See M 0134.
 2348 Christian Science Monitor: Religious Article. See M 0148.

Thursdays

2305 BBC: Commentary. See M 2305.
 2306 Christian Science Monitor: One Norway Street. See M 2306.
 2310 BBC: Financial News. See M 2310.

2313 Radio Australia: Sports Report. See S 1313.
 2315 BBC: Music Review. Classical music events and developments from around the world.
 2330 Radio Australia: Business Report. See S 2330.
 2334 Christian Science Monitor: Letterbox. See M 0134.
 2348 Christian Science Monitor: Religious Article. See M 0148.

Fridays

2305 BBC: Commentary. See M 2305.
 2306 Christian Science Monitor: Encore. See M 0106.
 2310 BBC: Financial News. See M 2310.
 2313 Radio Australia: Music/Information. See S 0330.
 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
 2330 BBC: Multitrack 3. Sarah Ward surveys the British alternative music scene.
 2334 Christian Science Monitor: Letterbox. See M 0134.
 2348 Christian Science Monitor: Religious Article. See M 0148.

Saturdays

2305 BBC: Words of Faith. See S 0540.
 2306 Christian Science Monitor: Herald of Christian Science. See S 0005.
 2310 BBC: Book Choice. See S 0245.
 2313 Radio Australia: Back Page. See S 0310.
 2315 BBC: A Jolly Good Show. See T 1515.
 2330 Radio Australia: At Your Request. See S 0130.

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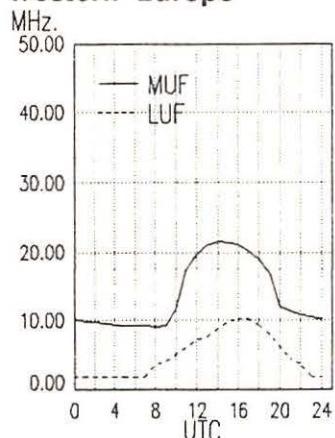
Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line shows the Maximum Usable Frequency (MUF) and the lower line the Lowest Usable Frequency (LUF) as indicated on the vertical axis of the graph.

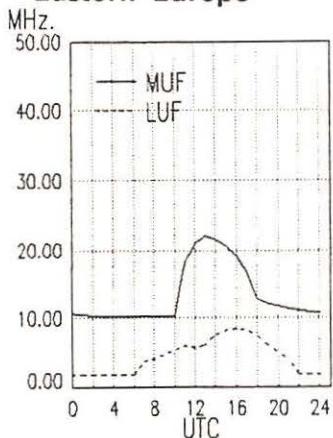
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

Propagation conditions between the EAST COAST and ...

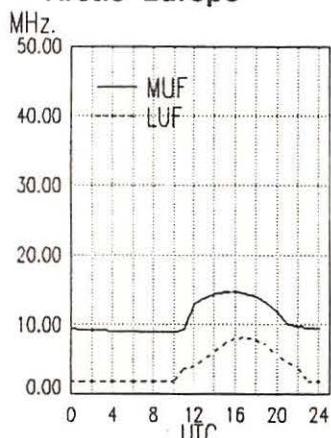
Western Europe



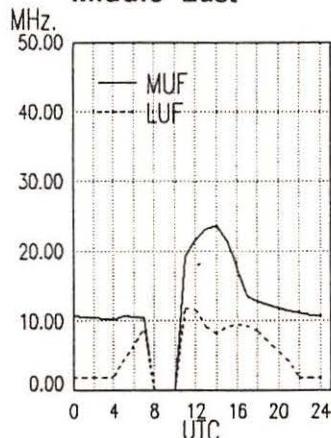
Eastern Europe



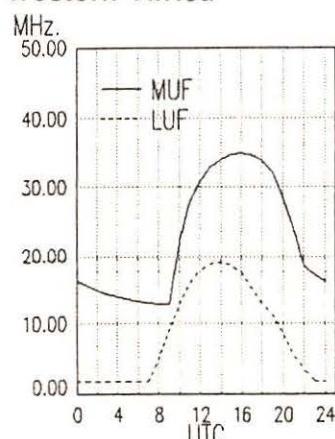
Arctic Europe



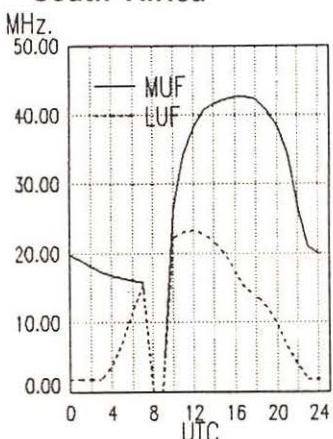
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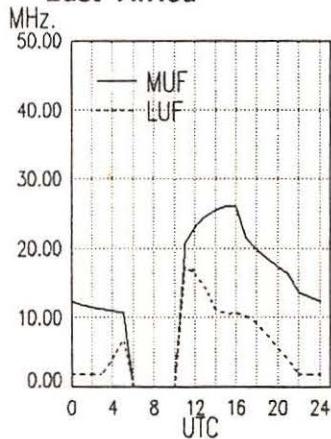
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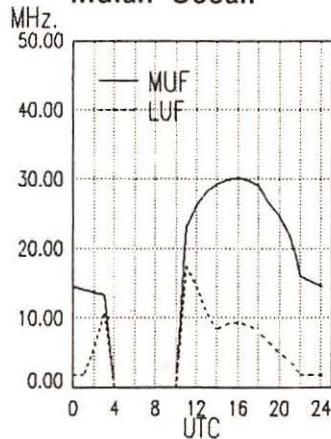
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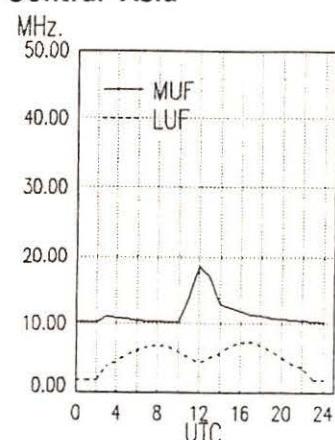
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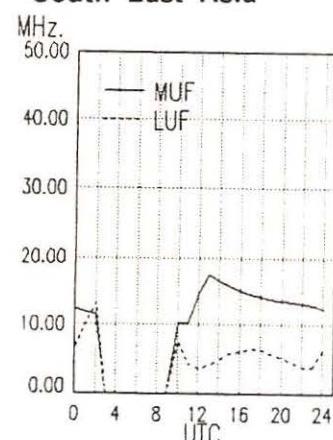
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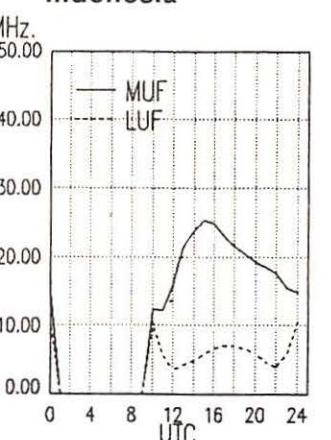
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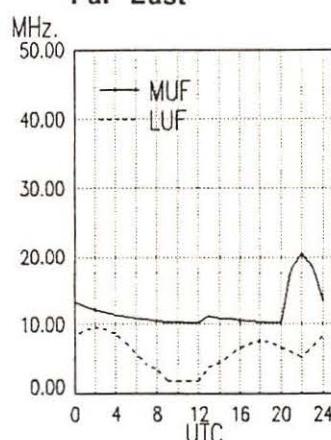
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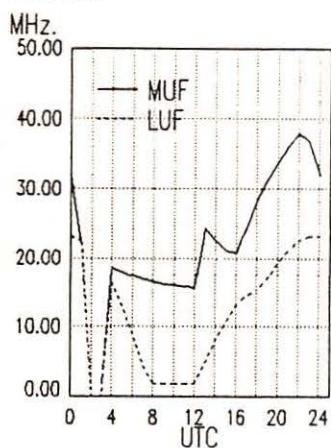
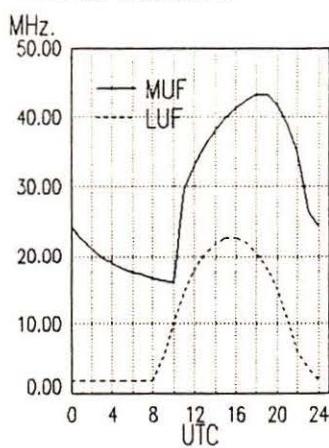
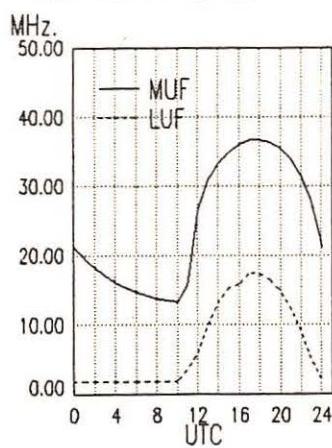
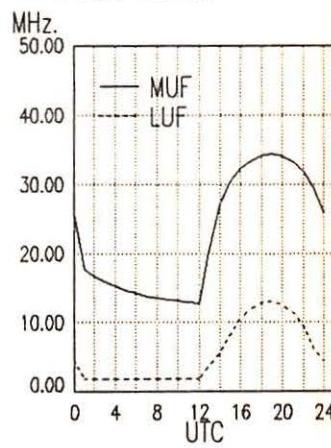
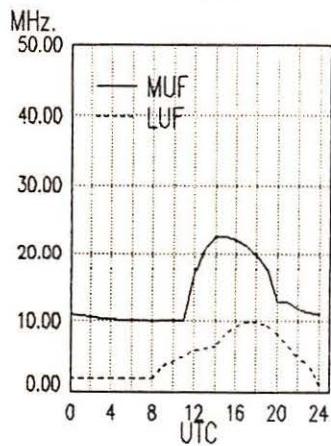
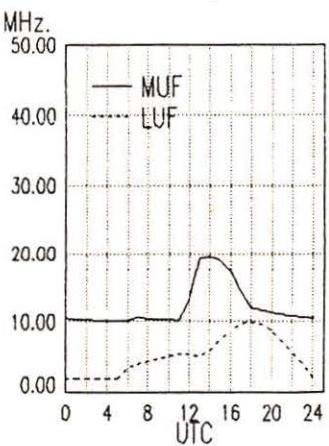
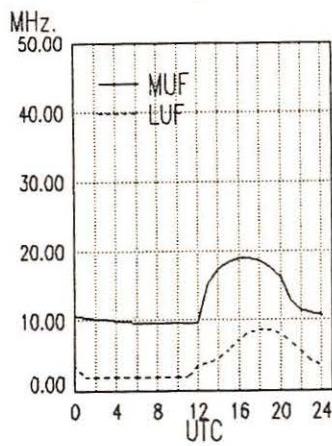
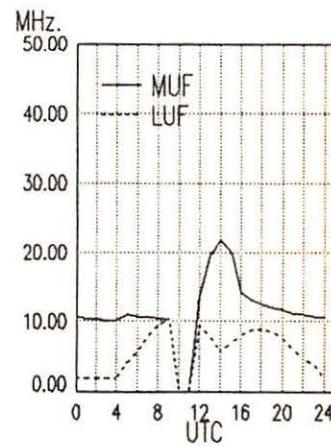
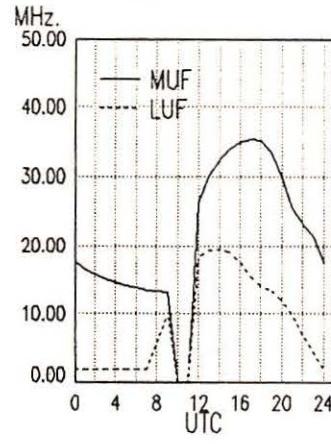
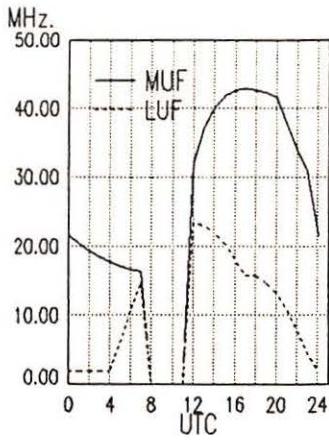
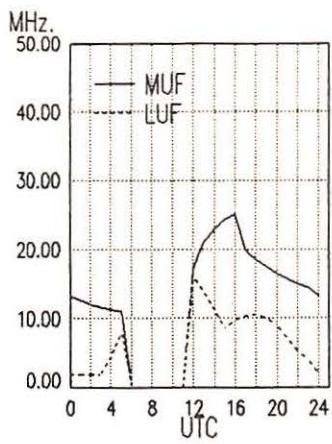
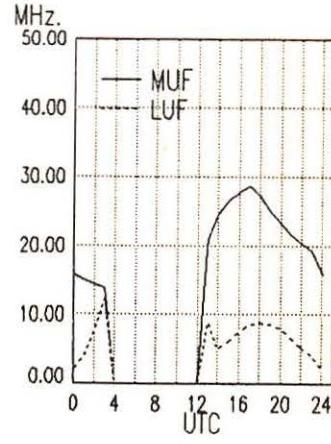


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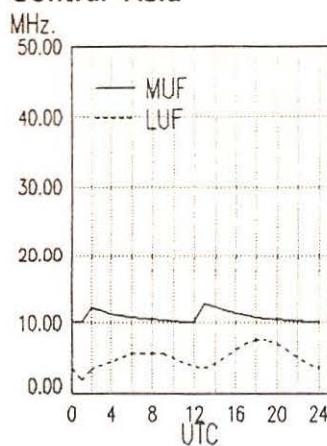
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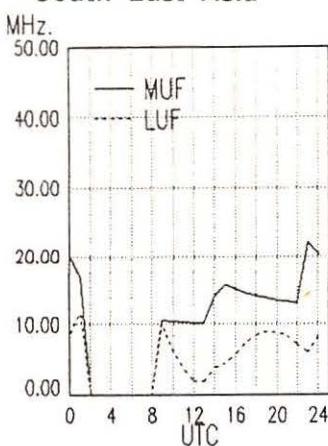
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Propagation conditions between the MIDWEST and ...

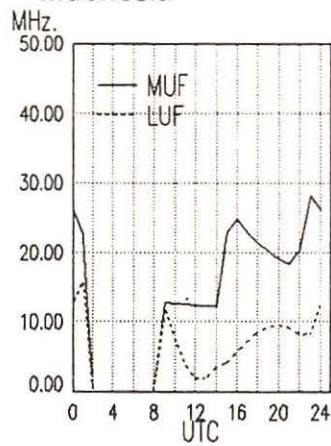
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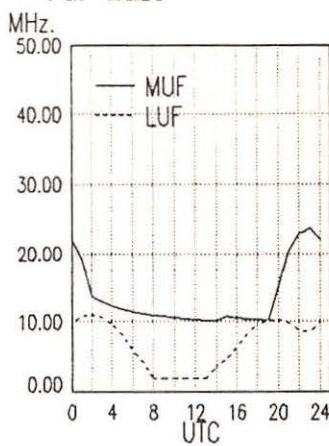
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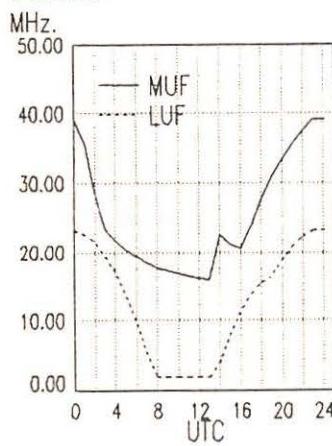
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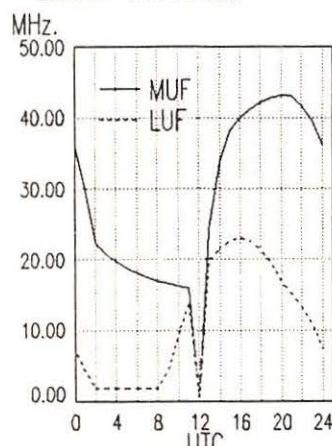
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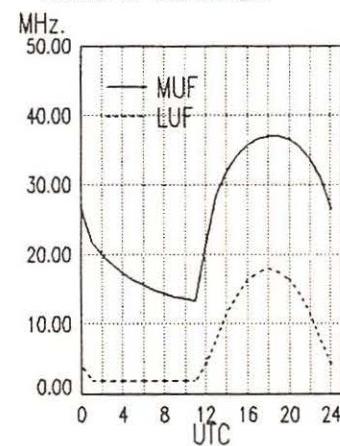
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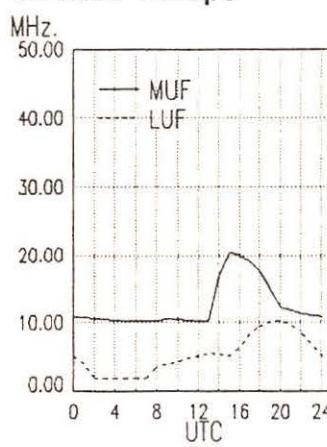
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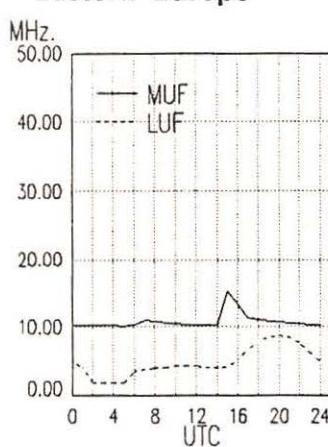
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**Propagation condition between the WEST COAST and ...**

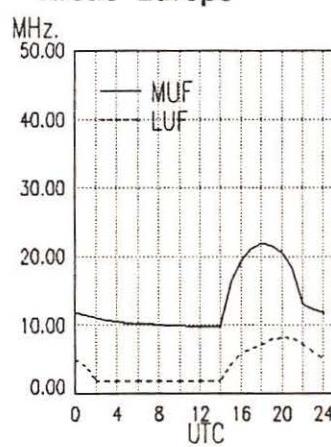
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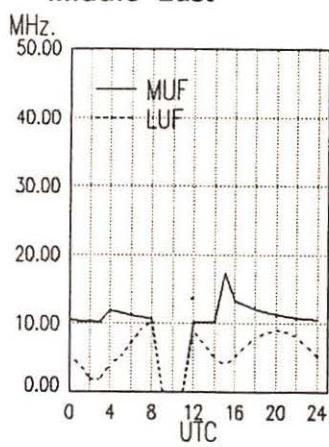
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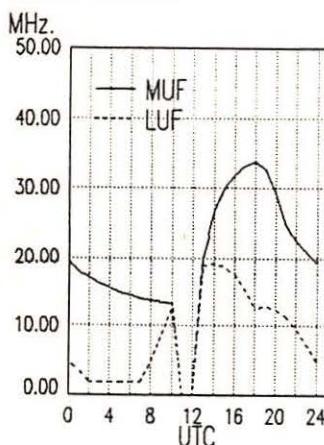
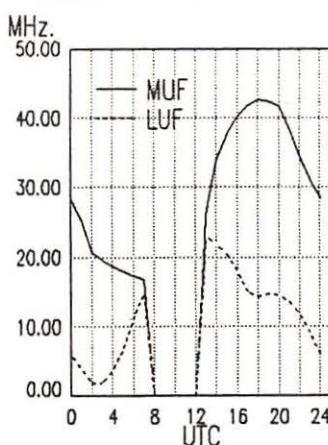
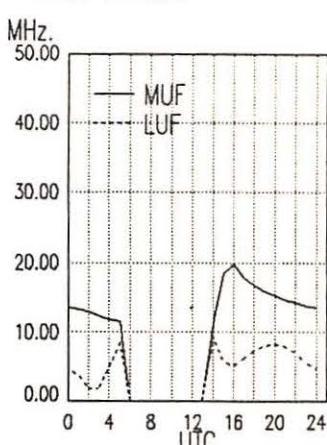
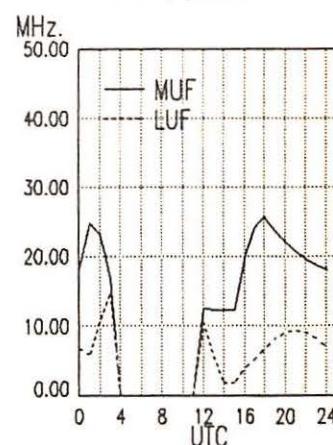
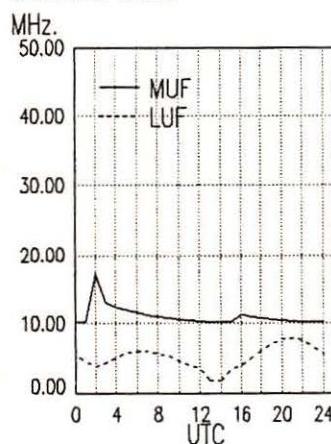
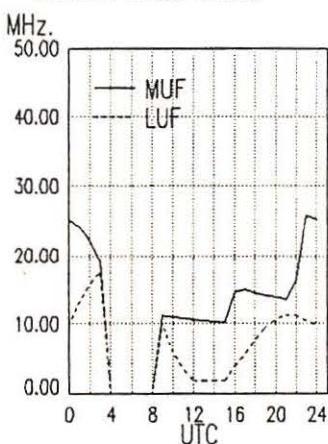
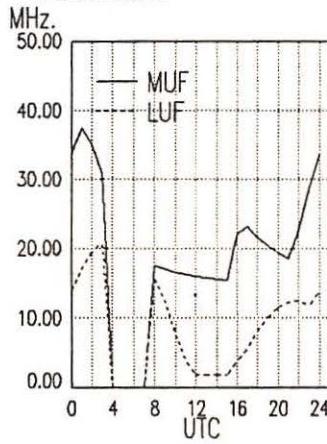
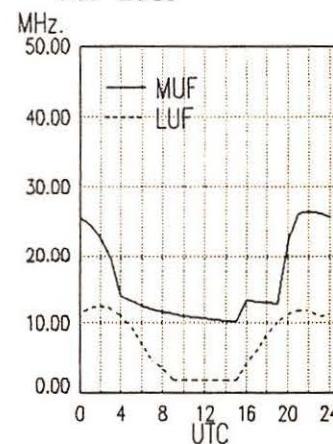
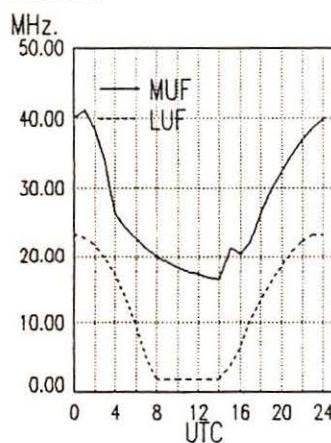
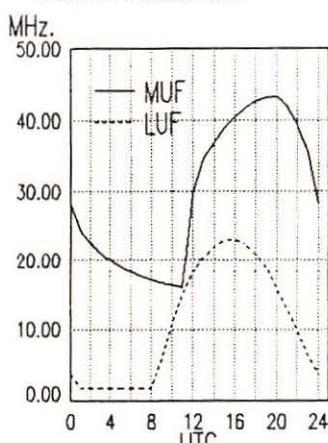
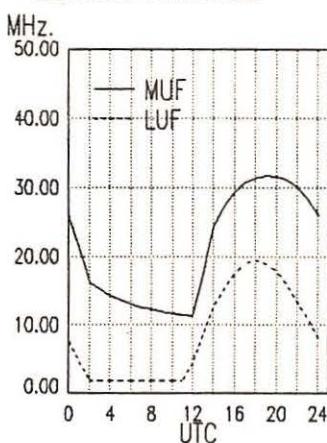


Arctic Europe



Middle East



Propagation conditions between the WEST COAST and ...**West Africa****South Africa****East Africa****Indian Ocean****Central Asia****South East Asia****Indonesia****Far East****Pacific****South America****Central America**

The New Realistic DX-350

Radio Shack?! For years it seemed like they turned out world band radios that were little more than toys.

It wasn't always this way, though. In the '60s and early '70s, the DX-150 and DX-160 were well up to the standards of the day, and many a shortwave listener cut his teeth on them. For the subsequent decade, though, a series of noble efforts to produce a worthy communications receiver fell flat. Technical snafus dogged Radio Shack's efforts, and finally they gave up and limited their efforts to cheap plastic portables that were, well, awful.

In the middle '80s, things improved with the introduction of the DX-400, a high-quality knockoff of Sony's then-popular ICF-2001. More recently, the similar DX-440 appeared on shelves, continuing that fresh tradition.

Problem is, while Radio Shack's top-end performers have made a commendable showing in recent years, their low-end models have continued to perform poorly. Now, at last, the company has made a complete break with that past by introducing two inexpensive portables, the DX-370 and DX-350. Both are superior performers in their price classes.

We reported on the DX-370 earlier this year in *Monitoring Times*. Here's what we've found with the DX-350. Overall, it's good news.

Low Cost Radio Well Suited for Traveling

The DX-350 is clearly inexpensive, listing at only \$69.95. But don't let that price tag fool you. While this is no Kenwood, it's a reasonably serious compact receiver for the traveler who can't or won't spend the big bucks required for the best travel portable around, Sony's ICF-SW1S.

Band Coverage Well Thought Out

The '350's coverage includes 87.5-108 MHz FM; 150-270 kHz longwave; 520-1705 kHz AM; plus world band 5.8-6.25, 7-7.53, 9.4-9.9, 11.55-12.1, 13.55-13.85, 15.05-15.65, 17.45-18.1, 21.45-22, and 25.65-26.15 MHz. For a model in this price class, that's reasonable world band coverage. However, in sets of this type actual coverage tends to vary a bit from sample-to-sample. So channels right at the edge, such as the BBC's 9410 and 12095 kHz, may or may not be covered by every unit.

An important plus is that the forthcoming 1600-1705 kHz expanded AM band segment for the Americas is included. Too, if you travel to Europe you'll appreciate its longwave coverage. Domestic European broadcasters, including the BBC, use longwave -- and in some remote areas it's still the best way to hear the main national broadcaster.

Needle-and-Dial: Where's It Tuned?

That's the good news. Where the low cost becomes evident right



off is in the old-fashioned needle-and-dial (analog) tuning circuitry. This means there is no digital readout to tell you where the radio is tuned. But its tuning needle, aided by bandspreading, is a big help. It lets you tune close enough to the station you want that you can home in on it by ear, assuming you know what the station sounds like. However, if you're doing the opposite -- tuning about, then trying to figure out what you're hearing -- this radio provides no exact frequency to use as a reference. That is annoying, and a waste of your time. But "cruising the bands" is not the sort of listening most people do on trips.

We tested the '350 by using it in conjunction with *Passport to World Band Radio*'s three schedule sections: by time, by country, and by frequency. With the by-time and by-country schedules, the '350 was satisfactory to operate. With *Passport's* Blue Pages, the by-frequency section, finding what's what turned out to be possible, all right. But it was also slow and painstaking, owing to the '350's lack of precise frequency display.

Decent Radio, Bad Image

The '350's other bugaboo is its single conversion circuitry. This means that "image" interference from signals on faraway channels tend to intrude, bothering the signal you're trying to hear. This, too, is annoying, but it's worse if you are listening to one of the weaker stations. Again, this is no DX rig -- its model designation notwithstanding -- so single conversion is something you can probably live with when you're traveling.

Truth is, if you want digital frequency readout and less image interference, you'll have to shell out at least \$100 just to get a model with *one* of those two features, plus reasonable overall performance. If you want both additional features, it's more yet.

Radio for the Blind

Features are plainly not the DX-350's high card. The set turns on and off, has a volume control, and is tuned by a pair of band selectors and a tuning knob. That's it. However, all those controls except the on/off button have markings in braille -- a commendable action by Radio Shack in recognition of the special needs of the visually handicapped.

Straightforward Operation Sometimes a Plus

When you're on a trip, simple actually can be better -- if only because you're pressed for time, and unlikely to be familiar with that do-it-all world band radio you decided to take along. All those nifty computer-tuning aids on world band supersets can be downright distracting if you have to familiarize yourself with them while getting dressed for dinner with a client's eminence grise.

One useful travel feature that's missing is a power lock. Power locks are like second on-off switches, and are designed to prevent the radio switching on accidentally -- and running down the set's batteries -- while it's packed away in your luggage. Fortunately, the '350's single on-off button is not easy to turn on accidentally, thanks to its having to be depressed within a cavity before activation.

Sensitivity and Selectivity: No Surprises

Overall performance, however, is adequate for the sort of listening most travelers do -- but not much more. Sensitivity to weak signals is fair with the built-in telescopic antenna (which, alas, does not rotate) in use -- about what you would expect from a model in this price and size class. (Adding a short hank of wire can help, especially if you live in the West or Midwest.)

Adjacent-channel selectivity, an important variable, is only fair -- again, typical for the genre. The set doesn't drift off frequency, nor does the tuning knob have noticeable backlash -- which is more than can be said for some models costing considerably more.

As we saw with the DAK MR-101, there's no free lunch. At best, all that can be expected in the DX-350's price range, given today's technology and costs, is the sort of performance the '350 provides. By not covering the tropical shortwave bands, this radio doesn't even pretend to be for DXing. However, for listening to the major broadcasters while traveling about, the '350 provides pedestrian, but acceptable, performance. And if it's stolen or lost, you can shrug it off.

Much Better than Predecessor Model

How does it compare to the set it replaced, the DX-360? Because of its bandspreading and lower price, it is clearly a better value than the earlier model. In fact, the only area in which the '360 is superior is in audio quality -- mainly because the '360 was a less compact set with a larger speaker.

Bottom Line: Nice, Cheap Travel Set

The bottom line is that the DX-350 is about as good a low-cost travel portable as you're going to find. It's more than adequate for picking up the major broadcasters -- BBC, Voice of America and the like. The next step up in performance weighs in at about twice the price.

Equally, this is no set for day-in-and-day-out listening. For this, Radio Shack's DX-440, which lists for \$199.95 -- or the virtually identical Sangean ATS-803A, which sells for about the same -- remains the under-\$200 set of choice, regardless of brand name.

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Major Impact Is on World Band Retailing

In the final analysis, perhaps the real news is not that this or that model works well for the price. Rather, it's how world band radio sets are being sold.

For the most part, sales of worthy world band radios have tended to center upon specialty houses whose volume is usually derived from mail order. These houses traditionally have provided the widest selection and most helpful consumer advice, and will probably always do so.

However, world band is moving increasingly into the retailing mainstream, with mail-order specialists being supplemented by ordinary retail outlets. Given Radio Shack's penetration of malls and shopping centers from coast-to-coast, you can now wander into any Radio Shack and know that whatever world band radio you buy is pretty much as good as any other available in that model's particular price class. That's going to change forever -- and for the better -- how world band radio fares with the general public.

mt

You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 7:35 PM ET on 5960 and 9755 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers, antennas and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland, and Lowe Electronics stores; and in Japan from IBS-Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of reports, send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

Scanner Modifications and Upgrades



Realistic PRO2006

It seems hard to believe that Radio Shack's first wide-frequency-coverage scanner, the Realistic PRO2004, has been obsoleted and upgraded twice in two years, but the recently-introduced PRO2006 was well worth waiting for.

The 2006 is probably the most popular desktop scanner presently on the market. With 25-550 and 760-1300 MHz (less cellular) frequency coverage, 400 memory channels and rapid scan/search capability, it offers a lot of performance at an affordable price. Can it be improved? Lester Jernigan seems to think so.

LESCOM (1116 Stone Street, Jacksonville, AR 72076) provides several "upgrades" (modifications) to make the 2006 even more potent. He offers improvements for the former PRO2004 and 2005 as well. We bought his deluxe version of the PRO2006 so we could report on its performance to our *MT* readers.

Turbo Speed

Although the 2006 already has 26 channel-per-second scan and search speed, nearly double its predecessors, LESCOM can boost that typically to 45 channels per second without any sacrifice in sensitivity. Our model really clips right along, yet stops on the weakest signals.

S Meter

It is often desirable to know comparative

signal strengths. Is that a local or distant signal? Mobile or base? Is the scanner antenna performing properly? What will happen if a few adjustments are made or if the antenna is moved? Simply watch the S meter as you perform the tests.

The LESCOM eight-LED array is installed vertically alongside the display where it looks quite at home and does a good job reporting signal strengths. A switch on the back panel selects bright or dim for your lighting requirements.

We did note that there is an audible "clicky-click" heard from the speaker as the channels pass during the scan sequence after the S meter is installed. The noise may be distracting in a very quiet room.

Cellular Restoration

As with all Realistic scanners that cover the 806-960 MHz band, the factory has locked out the cellular telephone frequencies. However, it is lawful to own any scanner which includes cellular coverage (although it is not lawful to listen in on mobile telephones).

The restoration of this range is quite simple: cut a wire and press a front-panel button; or let LESCOM restore this range on your PRO2006.

SSB Adaptor

The vast majority of signals heard above 30 MHz are FM (AM on the aircraft bands). Still, there are some rare single sideband transmissions made on some ham bands and

even in the 225-400 MHz military aircraft range. Additionally, amplitude-compandered sideband (ACSB) is an experimental mode used in some parts of the country on VHF high band.

The SSB adaptor must be used in conjunction with a shortwave receiver capable of SSB reception; a cable (not provided) is connected between the PRO2006 mini-jack and the shortwave receiver's antenna connector. With the host receiver tuned to 455 kHz and switched to USB or LSB, SSB is now receivable. Since the SSB takeoff is done by accessing a signal point in the scanner, no functional changes occur in this mode. The scanner works normally.

Beep Volume Control

Keypad annunciator "beeps" are intended to reassure operators that a key press really does something. If you find the "beep" as distracting as most listeners do, you will welcome this adjustable control. You may select full volume for noisy environments, or turn the control all the way down to silent--where most listeners leave it!

Squelch Improvement

"Hysteresis" is the term used for intentionally designing a little backlash into a squelch control so that marginal signals won't continually pop in and out of reception. In practice, most scanner owners seem to prefer having the control to adjust their squelch as the situation requires. LESCOM removes the backlash, allowing that choice.

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Direct-Conversion Receivers

You have probably heard people talk about DC (direct conversion) receivers and how simple their circuits are. The DC receiver is far less complex than its big brother, the superhet or superheterodyne receiver.

The most rank experimenters can assemble a DC receiver and have it operating in a matter of hours or a couple of days. The performance is superior to that of the early day regenerative or "genny" receiver, and the sensitivity can equal that of a well-designed superhet. Another advantage associated with the DC receiver is that it contains only a few active stages. This makes it ideal for battery operation when we are camping, boating or hiking. A block diagram of a typical DC receiver is provided in Figure 1.

Performance Limitations

Figure 1 shows that the DC receiver has no IF (intermediate frequency) system. The input stage or detector converts RF energy to audio frequency, and hence there is no IF system. This means that RF or IF selectivity can't be included in the design. Selectivity is the receiver characteristic which makes possible the separation of stations that are close to one another in frequency. The greater the selectivity, the "sharper" the receiver tuning and the better the rejection of unwanted signals.

Typical SSB receivers have an IF selectivity (by means of an IF crystal filter) of 2.2 or 2.4 kHz at the -3 dB points on the filter response curve. We may use CW filters that have a 3-dB bandwidth of only 250 Hz. DC receivers of simple design may have 3-dB bandwidths as great as 15 or 20 kHz, depending upon the Q (figure of merit) of the tuned circuit used

between the antenna and the detector. Again, the higher the Q, the better the selectivity.

The overall DC-receiver selectivity may be improved markedly if we use an audio filter after the first audio amplifier, or even at the output of the receiver. This type of filter may consist of inductors and capacitors (LC passive filter) or it may consist of op amps in an RC (resistance-capacitance) active filter. Circuits for these filters are published in *The ARRL Handbook*, *Solid State Design for the Radio Amateur* and *The WIFB WRP Notebook*. These books are available from The ARRL, Inc., 225 Main St., Newington, CT 06111.

The remaining shortfall associated with the DC receiver is that it responds to signal energy both sides of center frequency. In other words, "single-signal reception" is not possible. With a superhet we can listen to upper or lower sideband signals while rejecting QRM that may be present on the unwanted sideband. A DC receiver responds equally well to upper and lower sideband energy, which under some conditions may lead to QRM that we would not hear with a superhet. This annoyance is an acceptable tradeoff for the simplicity and otherwise good performance of the DC receiver (sometimes called a "synchrodyne" receiver).

Owing to the nature of the DC receiver circuit, it is necessary to obtain the required overall gain (usually 75 to 100 dB) at audio rather than at RF. The high gain audio strip amplifiers electro-mechanical noises that are present in the receiver front end. Tuning the receiver often produces micro-phonics that would not be heard in a superhet system. Such noises may originate in the bearings of the tuning capacitor or the contacts of a band switch.

Building a Simple Receiver

I recommend that you construct the circuit in Figure 2. It will provide a valuable learning exercise, and the end product will be fun to use for shortwave listening. You may construct it on Perf Board if you don't wish to lay out and etch a PC board.

You will note in Figure 2 that the first stage of the receiver is really a product detector rather than the usual mixer found in a superhet. The incoming signal is heterodyned with the signal from the VBFO (variable beat-frequency oscillator) to produce an audible difference frequency.

In other words, we feed two RF signals to the detector to obtain a difference frequency in the audio range. The two RF signals are very close in frequency (2.5 kHz or less) in order to accomplish this. Conversely, these two signals may be MHz apart in order to produce an RF difference frequency (IF) when using a superhet. The product detector in the latter type of receiver is used after the IF-amplifier chain.

Therefore, the term "direct conversion" means that the incoming signal from the antenna is converted to audio directly in the first stage of the receiver. This assumes that no RF amplifier is used ahead of the detector.

Output from Q1 is amplified by a low-noise audio transistor. Additional audio amplification is provided by a 741 op amp, which yields sufficient audio power to drive a pair of headphones. Speaker operation is possible if you add an LM 386 audio IC after the 741 op amp.

The VBFO in Figure 1 should be as frequency stable as the VFOs used in superhets. Quality components are necessary in the oscillator circuit in order to keep drift minimized. The capacitors that are identified as NPO are disc ceramics that have a zero temperature coefficient. They tend to maintain their values despite changes in ambient temperature. Dipped silver-mica capacitors may be substituted, but they will not be as stable as NPO units. If you can't obtain NPO capacitors, use polystyrene capacitors. They are more stable than silver micas, and they are the least costly of the three types.

Select a tuning capacitor that has a rotor bearing at each end of the assembly. This will provide better mechanical stability than a single-bearing capacitor. However, don't give up on this project if you can't locate a double-bearing unit. Use whatever is on hand rather than scrapping this project. You can always replace an inferior capacitor with a better one at some future date.

In any event, you will want to use a vernier drive mechanism to rotate your VBFO tuning capacitor. One of the Japanese vernier drives sold by Mouser Electronics will be fine. The drive unit will make it easier to tune in the

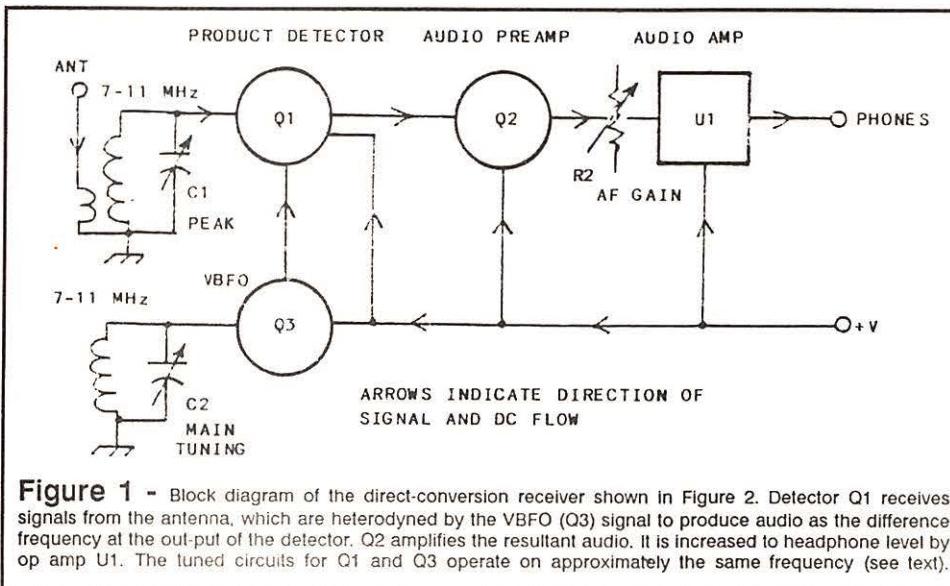


Figure 1 - Block diagram of the direct-conversion receiver shown in Figure 2. Detector Q1 receives signals from the antenna, which are heterodyned by the VBFO (Q3) signal to produce audio as the difference frequency at the out-put of the detector. Q2 amplifies the resultant audio. It is increased to headphone level by op amp U1. The tuned circuits for Q1 and Q3 operate on approximately the same frequency (see text).

desired station. It will also give you some number points for dial calibration. You will need these markers for relocating your favorite shortwave stations.

Keep all RF wiring as short and direct as practicable. Keep all VBFO leads as rigid as you can in order to minimize frequency shifts caused by vibration and movement of the critical leads. I suggest that you use stiff bus wire for the oscillator leads (no. 18 or 20 will suffice). Once you have the circuit operating to your satisfaction, affix the VBFO toroid coil to the circuit boards by means of a generous dab of clear silicone cement -- the rubbery type.

Receiver Operation

You may use a power supply that delivers 9 to 13 volts dc. The current taken by this receiver is approximately 15 mA. If you use an ac-operated dc power supply, be sure it is regulated: Variations in supply voltage will cause shifts in the VBFO frequency.

Connect an antenna to the receiver, apply dc power and adjust C1 for peak response on a weak signal in the center of the receiver tuning range. As you adjust the main-tuning capacitor, C2, you should hear numerous short-wave signals. The tuning range of the receiver may be changed by adjusting C3, the calibration trimmer. Always adjust C1 for maximum received signal.

R1 of Figure 2 is the RF gain control. It may be used to reduce the receiver sensitivity when strong commercial short-wave stations tend to "blanket" the receiver over part or all of its tuning range. Set R1 for minimum interference.

Some final thoughts

You may use this receiver to copy AM, SSB and CW signals. Addition of an audio filter is easy and worthwhile for reducing QRM. You may use one of the commercial RC active audio filters if you do not wish to build one. Autek Company and Bencher Company sell these devices. Keep an eye open for these and Heath audio filters at radio flea markets.

The operating range of this receiver may be altered easily by simply changing the inductance of T1 and L1. More turns on these coils will lower the frequency. Reducing the turns will raise the frequency. Don't

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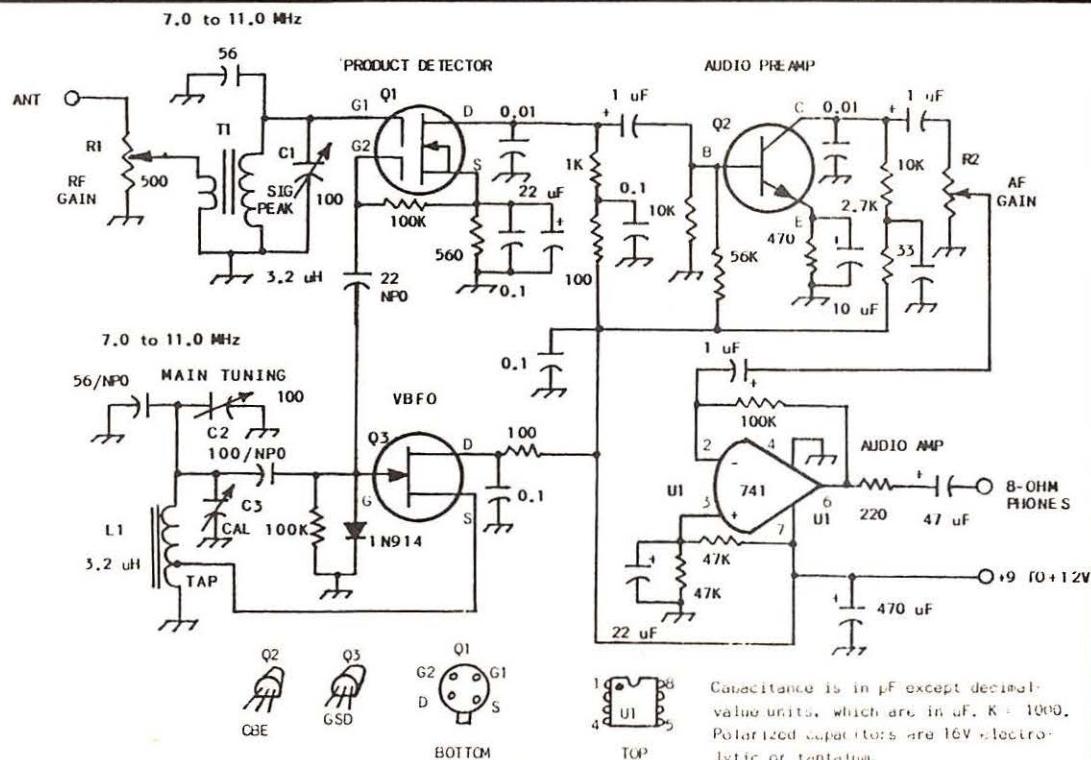
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Figure 2 - Schematic diagram of a 7-11 MHz DC receiver. Resistors are 1/4- or 1/2-watt carbon film or carbon composition types. C1 and C3 are 100-pf miniature air variables (see text). C2 is a 25-pf NPO ceramic trimmer.

The other NPO capacitors are zero temperature coefficient disc ceramic units. L1 and the secondary winding of T1 have 26 turns of no. 22 enamel wire on Amidon Associates T68-6 toroid cores. These cores are available from Palomar Engineers in Escondido, California, and from RadioKit in New Hampshire. L1 is tapped 7 turns above the grounded end. The primary of T1 contains 2 turns of no. 22 enamel wire.

Q1 is a dual-gate MOSFET such as the RCA 40673 or Texas Instruments 3N211 or 3N212. Other dual-gate MOSFETs are suitable. Q2 is a common 2N3904 or 2N2222A. An MPF102 or 2N4416 may be used for Q3. R1 is a 500-ohm carbon composition control, linear taper. A 10K-ohm audio taper, carbon composition control is used for R2. Disc ceramic capacitors are used, except for polarized units.



Readers' Forum

Happy New Year. I sincerely hope all of you had a great holiday season and are now ready to start the new year off with some letters from the readers of this column.

• One question that I have been asked repeatedly in correspondence is "Where can I get a copy of a service manual for my radio?"

This can be an almost insurmountable problem at times. If you are lucky enough to own a Radio Shack product, then Tandy Corporation will sell you a service manual for almost anything they make. There are exceptions, namely extremely old equipment like my original RS PRO-4 hand-held scanner, which still works great.

In any instance, go into your local RS store and ask the manager to order the service manual for your receiver/scanner/10 meter SSB rig. It will be well worth your time and money.

As far as Sony is concerned, I have had real problems getting Sony service manuals. Chuck Rippel explained to me several years ago that Sony is very specialized in their retail sales and service. A store handling home entertainment equipment has a problem ordering documentation and parts for shortwave receivers, for instance.

I procured a copy of the '001 service manual from a good friend in the UK when I was stationed at RAF Mildenhall. He owned a

Sony franchised repair facility. Outside of that one particular stroke of luck, I have been unable to procure service manuals for my '2010 and ICF-7600W receivers.

Anyone out there know how to "break the code" on getting Sony service manuals? If so, let me know so I can share it with the readers of this column.

Kenwood, ICOM and Yaesu owners, like Radio Shack users, have it made when it comes to getting service data. Most ham radio/shortwave retailers have a rather complete selection of manuals for all models in stock. Earlier models are available direct from the importer (Kenwood USA, etc) for a slightly higher price. Yaesu sent me a photo copy of the service manual for FRG-7700 synthesizer problems. The manuals are available from these "top-three" importers, so there is no excuse not to have the proper service data on the bench.

Uniden, Regency, Bearcat and other manufacturers have limited data available on their scanners. Having had a sick Bearcat III (crystal) scanner, I contacted Uniden for service data. What I was sent was a photocopy of a schematic that was only partially labeled. None of the ICs were marked on the schematic. ICs on the PC board had Bearcat house numbers on them,

so analyzing the circuitry was extremely tedious. How 'bout it, gang, anyone have information on how to get service data from these people?

Trying to locate service data on older tube-type equipment can be an exercise in patience and the most frustrating undertaking you can possibly imagine. Antique Electronic Supply, 688 W. First Street, Tempe, AZ 85281, is a source of some books on older receivers as well as parts including two sizes of dial cord.

Another source of hard to find receiver, transmitter, transceiver manuals is ARDCO Electronics, P.O. Box 95, Dept Q, Berwyn, IL 60402, and



There is limited service data available for many receivers, especially older models.



The addition of a tuner can turn a vertical antenna into useful DXing tool.

Hi-Manuals, P.O. Box J-802, Council Bluffs, IA 51502 (Include \$1 for their current catalog, as Hi-Manuals does not quote on their services).

• Don Montgomery of Walton, Oregon, sends along the information on the replacement for the 12BE6 RF amplifier tube used in a lot of the receivers of the 50s and 60s: use a 12CS6 or HK90 or 12H31. Thanks, Don, for that information.

• A good friend from my Great Circle Shortwave Society days, Ed Cichorek, writes to ask about adapting the Hy-Gain 18AVQ vertical for shortwave listening activities. The 18AV series by Hy-Gain was made for the 80, 40, 20, 15 and 10 meter ham bands, allowing a multiband antenna system in a very small area.

It is possible to use this antenna for SW bands by feeding it into an antenna tuner like the Grove TUN-4 or MFJ-16010. I have had limited success with vertical antennas for shortwave work, but they do perform well under certain conditions. The Butternut HF-2V (80/40 meter) vertical was used at this location exclusively for over six months in a test against two wire antennas. Results were a bit surprising but not altogether unpredictable.

In short, the vertical antenna will perform well on DX signals and should especially prove effective on the lower frequencies when used with a good tuner in the dawn-to-dusk (gray-line) transition. Give it a try, Ed. What the heck, it was free, right?

• Tom Doan from Hopkins, Minnesota, and several others have broached the subject of apartment dwellers and HF/VHF/UHF antennas. Sad fact is, guys, that nothing beats an antenna that is out in the air and up as high as possible. The whips that come on today's shortwave portables and all scanners are really only compromise antennas.

However, in certain instances, the addition of an external antenna can actually degrade

the receiver performance. This is due to the increased signal available to a poorly designed, overworked RF front end or single IC chip receiver.

If you live in a condo or some other high-rise type of abode that's full of concrete and steel, you really have your work cut out for you in trying to boost receiver performance. Several HF preamplified and active antenna systems are available. I have personally used the Datong AD-270/370 sold by Gilfer Shortwave, In Line Components AC-1 MicroModule and the Sony AN-1 active HF antenna systems. All perform extremely well and will give the portable SW receiver user a definite edge over the onboard whip.

Grove Enterprises sells the TUN-4 antenna tuner which has a gas-discharge protection circuit and a variable RF amplifier. This tuner can be used with a short (10 to 35 feet of wire) and will make a big difference in receiver performance.

Now for VHF/UHF antenna systems to enhance scanner performance, I have had extensive experience with the Dressler ARA-1500 active antenna system. This is a very rugged, high gain receiving antenna designed



Preamplified antenna systems such as the Datong AD-270/370 for shortwave can help overcome reception problems for the apartment dweller.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

to cover from low band VHF into the gigahertz range. It is sold by Gilfer Shortwave.

Grove Enterprises also markets the PRE-4 VHF/UHF preamp system for use with an existing scanner antenna. The PRE-4 has a remote mounted amplifier module and the control box offers complete control over the amplifier from inside the shack. This system is very attractive due to the relatively low price and the ability to work with an existing scanner antenna system.

Hope this helps solve some problems for all you "cave dwellers" out there.

• Mark Hollock of Mountaintop, Pennsylvania, sent along a couple of projects from *Popular Electronics*. Unfortunately, Mark, these are copyrighted due to their prior publication and therefore I cannot use them in the column. Thanks for the frequency listing, though, and in a couple of weeks I'll have a chance to reciprocate.

• David Bogart, El Campo, Texas, writes to bemoan the lack of good audio in particular speakers that are used in today's communications receivers. Boy, could I write a book about this topic, David. The February 1989 *Monitoring Times* ran a feature article about improving receiver audio. Write to MT, P.O. Box 98, Brasstown, North Carolina 28902, and ask for a reprint of this article

(Don't forget to include \$2.00 to cover the cost of copying and postage).

In short, equipment manufacturers spend countless hours and tons of money in designing bullet-proof RF front ends, wide dynamic range IF strips and lots of bells and whistles into today's radios. Unfortunately, they don't place very much emphasis on the audio amplifier section. Absolutely the very best audio that I have ever heard from an unmodified shortwave receiver is on the Dymek DR-33, now out of production. My DR-33 has outstanding audio and is a real pleasure to listen to for extended periods of time.

An external speaker is a real help and will make a tremendous difference over the normal speaker inside the receiver. Radio Shack has a good selection of outboard speakers including the amazing Minimus 7. The stickler is that most portables SW receivers do not have sufficient audio output to sufficiently drive a good external speaker. In addition, a high fidelity add-on speaker like the Minimus 7 needs to be modified to alter the high frequency roll off to a point where the annoying high frequency band noise is not reproduced.

Try strapping a capacitor across the speaker leads to roll off the high frequencies. Start with about a 10 Mfd electrolytic and gradually increase the capacitance by strapping additional 10 Mfd caps in parallel with the first until the desired effect is achieved.

Hope this will help out those who are questing for better audio from their favorite DX machine.

Well, gang, that is a wrap for this month. Have a good time on the bands and log lots of DX during the season. 73. Rich.

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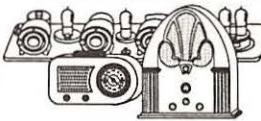
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Pour yourself a tall one and enjoy the Beverage

You've probably heard of beam antennas. Some are called Yagi-Udas, cubical quads or log-periodics. But how about the Beverage beam, or wave antenna? It is one of the easiest beams to put up and it's very directional. Often it can really pull the signal you want out of the noise and interference.

Essentially, the Beverage beam amounts to a long wire, about 12 feet off the ground, running from your operating position and pointing in the direction of the station you want to hear. It is supposed to be long -- a significant portion of a wavelength, preferably more. But I have had really good performance on the AM broadcast band with Beverages as short as 150 to 200 feet.

Some radio buffs report using the Beverage into the lower half of the shortwave band, where shorter antenna lengths should be acceptable. It is also used on the low frequency bands, where its length should be proportionally longer.

The shorter lengths we use within our practical limitations may not qualify, in theory of operation, as true Beverages, but whatever the case, I have been very impressed with the performance of the ones I have built.

For this antenna we forget the old radio operator's rule of "the higher the better." The maximum height you want this one is about 12 feet. This is because the antenna is actually functioning like a transmission line, capturing the signal which comes running down its length.

Since the antenna is low, you may be able to run it along a tall wood fence or through a hedge of trees or tall shrubs. Of course, it should point in the direction of the station you wish to receive, as it is very directive. Either end can point at the station you are monitoring, as it is a bi-directional beam. If you have a long span of supporting trees or bushes which is long enough for such an antenna, but not

pointing toward any of your favorite stations, you could just put a Beverage up in whatever direction that span runs, and see what is coming in from far away in that direction. The results may surprise you.

Let's Build One:

Essentially all that I used for my Beverages was a roll of insulated wire. As it was insulated, I didn't bother to put insulators on the tree limbs over which I tossed the roll. I brought the end of the antenna into the operating location without any special lead-in or matching circuit.

1. Find yourself a long run for your wire. The longer the better. One hundred feet is short for this kind of antenna. Make the antenna as long as you practically can. Some of these antennas have been run for several miles in length.

The wire can be low to the ground: not above 12 feet high, and it can be lower. I would suppose that even three or four feet elevation would work. As you get it low you must consider whether it presents a hazard that could be dangerous to pedestrian traffic, etc. If you run it along the top of a hedgerow, or through a line of trees you needn't put up any posts at all. I once put one up by making long throws of the roll of wire (weighted) over the tops of short trees in a wooded area.

I also once tried an abandoned run of telephone wire as a Beverage antenna, but for some reason which I never understood, it did very poorly. In theory, it should have worked well. Some of you farm folks may have an unused electric fence, one side of which could be used for a Beverage antenna.

2. Get yourself a roll of well-insulated wire. It should be a plastic-type insulation, not just a varnish. It must be as long as the stretch you are going to

utilize. Bare wire can be used, but you must insulate it where it touches objects in its path.

3. Run the wire straight toward or away from (it's bi-directional) the direction which you want to favor with your monitoring. If you make it long enough, the beam will be very sharp, so point it carefully.

It is possible to make this antenna unidirectional, so that it receives well only from the direction in which it points away from your receiver. To do this, a resistor of something like 600 to 800 ohms is connected from the far end of the antenna to a good earth ground.

For good cancellation of the signals from the reverse direction, the resistance must be adjusted while you listen for the best cancellation of signals coming from the undesired direction.

4. Secure the wire well at both ends. If it seems to need more to hold it in place, tie it in place at some of the points where it is supported.
5. Run the near end of the antenna into your monitoring station and connect it to your receiver antenna input. If you have an antenna tuner you can see how it works with this antenna. A balun to match the higher impedance of the antenna to the lower impedance of the receiver antenna input can also be tried. I used my antenna connected straight to the center connector of the coaxial antenna jack.
6. Generally, an antenna this low is not too prone to attracting lightning, but most damage to receivers is from current induced by strikes in the vicinity of the antenna. This could still happen with a low antenna, so the minimum lightning protection advised is the standard minimum: never operate in stormy weather, and

disconnect the antenna whenever it is not in use.

Using the Beverage antenna:

When using this antenna on the AM broadcast band I was amazed at how well it could reject signals off its beam and give clear-channel reception for the signals directly off its ends.

When you first use it, try to have a nondirectional antenna handy to compare it with. Notice how the signals for the on-beam stations clear up and seem to pop up out of the interference as you switch from the nondirectional antenna to the Beverage.

An interesting note

...from *MT* reader Mike Fern, KJ6DK, who lives where he is allowed no outside antennas.

He says that he built the "Convention Special" active antenna which appeared in this column in July last year. He used an aluminum window frame in place of the wire whip on the antenna. He also grounds the side of the input not connected to the window frame.

Mike reports that with this setup he gets performance equal to, or up to two S-units better than he gets with his 24 foot folded-dipole antenna which is mounted on his living room ceiling. Good experimenting, Mike; Keep it up.

RADIO RIDDLES

Last Month: I pointed out that some monitoring buffs, including *Monitoring Times* own Bob Grove won't allow a digital computer in their monitoring post. In view of the computer's usefulness in many facets of monitoring, why is this?

Well, the answer to that question lies in the digital bits, or pulses generated in computer circuits. These pulses turn on and off very rapidly, and in so doing they generate a veritable spectrum of radio frequency interference.

As you can see then, a computer is



unintentionally a radio transmitter which transmits unwanted signals to the area around it. As a matter of fact, some businesses have spied on their competition by parking a van equipped with sophisticated monitoring equipment near the building that housed their competitor's computer facility. Inside the van they were actually able to use a second computer to read the data being processed by the computers inside their competitor's computer facility. This was possible due to the unintended radio-transmitter action of computer circuits.

Computer manufacturers design their computers to reduce the unwanted radiation of this interference as much as they can reasonably do, but enough radiation remains to interfere with your shortwave listening in many instances: especially if the computer is on the table right by your receiver. And that's why Bob Grove and many other people are not too happy with the thought of having a digital computer at their monitoring post.

This Month: This month's antenna, the Beverage, has a reputation for really "beaming in" on the signal at which it is pointed, and bringing that signal up out of the interference to a nice listenable level.

But in truth, the Beverage antenna is a low-gain antenna. How can a low-gain beam antenna bring a signal up above the other interfering signals? It sounds contradictory, but it happens. How? Think it over, and you can probably come up with the answer. We'll discuss it here next month.

Till then, peace, DX and 73.

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Q. While we in the U.S. are familiar with radios we see, what about other radios worldwide? What do they have and what kinds of antennas do listeners use? (Robert Swan, LaVale, MD)

A. Most frequency ranges are used nearly identically the world over. There are minor variations, but the same radios can handle all regions. Thus, we see the same radios here that they see in New Zealand, China and Hungary.

Similarly, since radio waves behave the same everywhere, antenna installations are the same as we have here. Right now, some listener in Nepal is probably asking the same questions to someone he knows. Hopefully, he is getting the same answer!

Q. What are the best, all-frequency-coverage scanner antennas presently on the market? (Frank Morfe, Baltimore, MD)

A. Among passive (unamplified) antennas for non-directional installations, the Channel Master 5094A "Monitenna"; for highest signal strengths and some directivity, the Grove Scanner Beam. For active antennas: the 500 kHz-1500 MHz Diamond D707 for base use and the Diamond D505 for mobile applications.

Q. Since receiving sets like the ICOM R71A and R7000 have scanning functions, why aren't they called "scanners"?

A. The term "scanner" is reserved for radios specifically designed to rapidly sample memorized frequencies, looking for activity. General coverage communications receivers are primarily designed for high quality, single-signal reception; scanning their

memories is a secondary function.

Q. I have new batteries in my Sony ICF2010, but I can't seem to get it to operate except with the AC adaptor; how come? (Several queries)

A. The contoured battery compartment rigidly supports those D cells so that they don't slap around and cause damage during rough handling; perhaps too rigidly. If the center post of the topmost battery is not long enough, the shoulders of the compartment prevent the cell from making contact.

A small metal washer (preferably brass or zinc plated) placed between the center post of that D cell and the contact in the radio usually does the job.

Q. Why is it legal to use an Airphone aboard an airliner, but not a simple AM/FM radio? (David Stearns, Lenexa, KS)

A. The problem is not with the nature of the radio service, but with the potential interference caused by the receiver's oscillator with communications and navigation equipment.

Air-to-ground radiotelephones are specially designed to minimize stray radiation which might confuse the delicate instrumentation of the radionavigation equipment; over-the-counter AM/FM radios are not.

Q. Does a synthesized-tuned receiver have more background noise than a comparably-priced analog tuner? (S. Hara, Rosemead, CA)

A. Yes, at least among portables. Synthesizer noise is commonly called phase noise and requires extensive (read: "expensive") filtering and shielding to remove it.

Q. Where do the abbreviations for antenna connectors like "BNC" come from? (Al Shack, Simi Valley, CA)

A. For standard interconnection of accessories, military designators gradually evolved over a period of time. "PL-259", for example, was one of a series of plugs, while "SO-239" was a socket for it to fit. "BNC" stands for "Bayonet: Neill Concelman" (the inventor)!

Q. Do hams have exclusive use of certain bands like 440-450 MHz? (Robert Brocks, Phoenix, AZ)

A. The amateur radio service shares most of their bands, but does have exclusive use of some small swatches of spectrum like 28.0-29.7, 144-148, 222-225 and 440-450 MHz.

Q. What is the best length for a shortwave receiving antenna? (Phillip Anderson, Springfield, VA)

A. A U.S. Navy study decades ago revealed that, if properly matched, a single element only five feet long is adequate for all receiving applications from 2-30 MHz. Once an antenna is large enough to capture enough signal voltage to overcome noise internally generated by the receiver, further increases in antenna capture does nothing but increase noise right along with the signal.

So what good is a giant antenna array? For one thing, it can be directional, reducing signal interference from other sources and concentrating its efficiency on the desired transmitter.

A wire about 25-75 feet in length is usually adequate for most casual listeners; longer antennas will provide louder signals, but more atmospheric and electrical noise interference as well, the ultimate limiting factor in shortwave reception.

Q. Where can I get a digital descrambler to let me hear the encrypted communications of my local police? (S.P., Dover, NH)

A. The Electronic Communications Privacy Act (ECPA '86) specifically forbids monitoring privacy-protected communications. While there is some debate as to

Bob's Tip of the Month:

KENWOOD TS711 FREQUENCY EXPANSION

There seems to be a great deal of interest in expanding the frequency limits of hand-held transceivers, even if the transmitter capability cannot be licensed. Hobbyists feel that if the capability is there and they've paid for it anyway, they might as well have it available.

Richard "Hop" Hays of Birmingham,

Alabama, recently discovered the results of adding and deleting a series of logic diodes in his Kenwood TS-711 transceiver. According to Hop, removing D30 permits transmit and receive coverage of 141-150 MHz enabling the rig to be used legally by MARS licensees as well as hams.

Questions or tips sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you desire a reply by return mail, you must enclose a self-addressed, stamped envelope.

whether common digital modes like radioteletype are digitized for privacy (and thus entitled to legal protection from uninvited listening) or simply digitized for better communications, digitized speech is clearly processed to avoid casual interception.

While there are many encoder/decoder sets on the market for use with telephones and transceivers, receive-only decoders—clearly intended for surreptitious listening—are no longer manufactured in the United States.

Even when scramble decoders were made for scanner users, they were all of the speech inversion variety; no consumer descrambler was ever available for digitized speech.

Q. Is there any difference between the rubber ducky antenna that comes with the Bearcat 100 XLT and 200 XLT even though the latter covers 800 MHz? (Fred Forkel, River Grove, IL)

A. None.

Q. I recently purchased a used Wilson "Citi-Com" WH2510 at a flea market but don't know what it is. Can you help me? (Joseph Clements, Houston, TX)

A. This ten-channel, 25 watt, VHF, programmable transceiver is the same as the Regency RH256; both are very popular due to their ease of custom programming by simply taking off the cabinet and attaching a jumper between two points. The specific sequence of commands is listed in the service manual.

Q. What are the highest and lowest frequency bands in use? What are these bands called? (Robert Brock, Phoenix, AZ)

A. The U.S. Navy Project ELF (extremely low frequency) transmits radio signals as low as 76 Hz. The FCC licenses the range 9 kHz through 300 GHz. The internationally-adopted nomenclature for these bands is as follows:

3-30 Hz	Extremely-Low Frequency (ELF)
30-300 Hz	Super-Low Frequency (SLF)
300 Hz-3000 Hz	Ultra-Low Frequency (ULF)
3 kHz-30 kHz	Very-Low Frequency (VLF)

30-300 kHz	Low Frequency (LF)
300-3000 kHz	Medium Frequency (MF)
3-30 MHz	High Frequency (HF)
30-300 MHz	Very-High Frequency (VHF)
300-3000 MHz	Ultra-High Frequency (UHF)
3-30 GHz	Super-High Frequency (SHF)
30-300 GHz	Extremely-High Frequency (EHF)

Q. My scanner stops scanning every time I transmit on my CB radio. How can this be eliminated? Al Shack, Simi Valley, CA

A. Assuming you are running legal power (no more than 5 watts), you need to separate the antennas as far as possible; a 27 MHz CB (notch) filter in the scanner antenna cable will also help remove that unwanted signal which is being detected by your scanner.

Q. My scanner has two separate antenna inputs, one for the 800 MHz band and the other for the remaining frequencies. How can I hook one antenna to both jacks? (Mark, NY, NY)

A. Easy: use a standard TV splitter, available from Radio Shack and most electronic departments in discount stores. They are fitted with F connectors, so you will need to provide adaptors for your Motorola jacks.

If you are unable to find enough hardware to make it yourself, the Grove CPL-SC dual scanner multicoupler (\$39.95) is ideal for such an application.

Q. Is it possible to modify a Uniden BC200XLT for continuous coverage from 29-956 MHz without the break between 512 and 806 MHz? (R. Holmes, Cleveland, OH)

A. No. While certain overlaps are intentionally designed into many microprocessor controllers, the inclusion of the UHF TV channels (512-806 MHz) is not in Uniden chips.

A comprehensive list of questions and answers regarding monitoring may be found in Bob Grove's "Scanner and Shortwave Answerbook," \$12.95 plus \$2 shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902.

Shortwave Navigator

The \$69 Macintosh program that gives you more than just frequencies. Navigator offers graphics and sound, program information (including DX/Media programs), reports, searching and sorting, logging, buttons and macros, and simplicity of use. *WRTH Most Innovative Software 1988*. Now, with HyperCard 2.0, enjoy multiple windows, etc. If you use any Kenwood TS Series equipment or the R-5000, get the computer control version for \$99 (includes Copilot/Autopilot).

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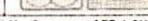
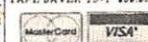
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LETTERS

continued from page 3

AM range), three VHF (30-66 MHz LSB FM) and three HF (2-30 MHz SSB) radios, and two SATCOM systems! Now there's a picture to send home to the kids!



Hi! My name is Ed Fuhrmann. I'm a long-time *Monitoring Times* reader, an avid shortwave listeners, ham (N4JVE) and an electronics technician serving with Oceanographic Unit Three aboard the USNS H.H. Hess (T-AGS 38).

"Oceanographic Unit Three is one of three deep-ocean units conducting detailed geophysical survey operations in all oceans of the world. It is a military unit comprised of three officers and 24 enlisted. The USNS H.H. Hess is manned by a civilian contract-crew under the cognizance of Military Sealift Command. Working with us are five to six civilian hydrographers and scientists from the Naval Oceanographic Office (our boss).

There are also, says Ed, several hams on board (their MARS call sign is NNN0CYX) and twice as many shortwave listeners "who take full advantage of being on a globetrotting mobile platform."

Thanks, Ed -- enjoyed the letter!

A few issues back, Robert L. Drury of Long Beach, California wrote to ask about the strange array of antennas "sprouting" from L.A. County Sheriff's vehicles. Now comes a reply from another *Monitoring Times* reader who says that "the array he speaks of sounds to me like the stolen motor vehicle tracking system called LOJACK. The system has a four antenna array in a square configuration."

When you purchase LOJACK, the dealer

installs a small transmitter in your car. If it is stolen, the transmitter is activated by the police, who track the location of the vehicle using a direction-finding array mounted on police cars.

"I have been trying to establish pen pals in radio monitoring for years now with little success. It seems that they are too busy to correspond," writes Robert Hilton of Fort Wayne, Indiana. "Robert saw the letter from Russian DXer Alexei Yakovlev in last month's issue and wondered if he might be interested in responding.

Robert, we can't guarantee you a pen pal but we can print your address and ask that anyone from outside of North America who is interesting in exchanging information with a U.S. DXer write Robert at 5809 Heatherview, Fort Wayne, Indiana 46818.

"Please tell me how I can receive Radio Tirana, Albania, in English. What are the frequencies and when is it on?" writes Joseph Clausen of Pittsburgh, Pennsylvania. Thanks for the letter, Joe. I think you'll find the answer in the frequency section, starting on page 58.

We did want to warn readers against listening to Radio Tirana. A few months ago another reader wrote and asked for Albania's frequencies. We reluctantly complied. Six months later we got a change of address request from him, asking that future issues of *MT* be sent to a suburb of Tirana. Citizens! Be careful! Albanian propaganda can be dangerous.

Ed Atkinson writes to ask if we'd tell readers about his "American Citizenship Net." On the air every Wednesday night at 0300 UTC on 3950 (plus or minus 2 kHz), "the net," says Ed, is designed to "awaken Christian Americans" who are "of the people." Speakers give a one to two hour talk with breaks, then answer questions from ham radio operators.

But wait a minute. Can you do that under FCC rules? "The net," says Ed, "is protected by the right to free speech and peaceable assembly secured by the 1st Article in Amendment at the National-Federal level and is operated by a person who is not a 'citizen of the United States.'"

Mr. Atkinson closes his letter by saying that he "will not accept mail with a zip code or abbreviated state designator" as this gives the IRS legal jurisdiction to collect income tax from him.

Could be an interesting listen.

Guess who we got a letter from? Igor

Sannikov! Here's what Igor had to say.

The only way you're going to understand this is if you've been following our little soap opera from the start. Anyhow, Sannikov writes, "If you could only imagine what fun it was for me to read the letters in *Monitoring Times*!"

Referring to Tonny Sorrenson, who visited him at his home in Kirvo in the Soviet Union, Sannikov writes, "The respected secretary of the Danish SW clubs International didn't even suspect he was spending almost two weeks in the imitation home of a fake Igor Sannikov, talking to his appointed parents and wandering along the phony streets and the surrounding artificial woods of the KGB testing area called 'Kirov.'"

Well, he's got a good sense of humor. Sannikov, who signs his letter "007," closes by saying that "Glastnost is really what it is! There is not risk at all!"

"I saw Rod Pearson's recipe for Cubos in the November issue," writes Roger West of Amery, Wisconsin. Roger, apparently a brave soul, actually tried it.

"They are excellent!" he writes. In fact, says Roger, they are so good that "I am going to treat our scanner club tonight. Maybe we'll change our name to the 'Cubos.'"

We caution readers about lightning protection. We warn them against listening to cellular telephone frequencies. But this is the first time we've ever told a reader to make sure there was a designated driver at a scanner club meeting!

Gene Hughes, editor of the popular *Police Call* series of scanner frequency directories, writes to say that he "just finished Brian Johnson's fine article on the history of the San Diego Police Department radio system" and offers a few corrections to the article.

"The AM frequency that San Diego used was 2490 kHz (not 2940 kHz). The AM band 2366-2498 kHz was for police radio. Also, their first VHF frequency was 158.970 MHz, not 158.730 MHz, which was their second frequency."

In addition to *Police Call*, Gene serves as a volunteer consultant on police communications ("complete with LAPD ID card," says Gene proudly).

Speaking of police, we have a letter from a person we assume to be a Brevard County, Florida, officer who asks that we identify him only as "DeLeon." DeLeon "combines his radio hobby with the battle on drugs."

CONVENTION CALENDAR

Date	Location	Club/Contact Person	Feb 2-4	Miami, FL	Southeastern Division Conv/ Evelyn Gauzens W4WYR 2780 NW 3 St, Miami, FL 33125
Jan 12	Cameron, MO	Green Hills, Missouri Valley & Ray Clay ARCs Gordon Miller WA0ZOG 15816 Oakmont Pl, Kearney, MO 64060	Feb 16-17	Sarasota, FL	Sarasota Area RA/ John Bates KC4ECA 5604 Antoinette St., Sarasota, FL 34232
Jan 15-21	Duluth, MN	Beargrease Amateur Radio Coalition 8th annual John Beargrease Sled Dog Marathon Special Event Station KB0DAV (Dogs After Victory); This is a safety net for the health and welfare of mushers and dogs during the 500 mile wilderness race. SSB & CW 10 through 80. Send QSL and SASE to BARC, P.O. Box 500, Duluth, MN 55801.	Feb 23-24	Cincinnati, OH	Great Lakes Division Convention Contact: Stan Cohen WD8ODQ, 2301 Royal Oak Ct., Cincinnati, OH 45237; 513-531-1011. Location: Cincinnati Gardens Exhibition Center, Langdon Farm Rd & Seymour Ave. 8:30am-5pm both days. Advance tickets \$6 (by 2/16), \$8 at door.
Jan 19	Monterey, CA	Naval Postgraduate School ARC Winterfest 91 - ham demonstrations & flea mkt Location: Monterey Fairgrounds Salinas Room, 8a.m.-3p.m. Contact: Pat (days) 408-649-4444 Doug (evenings) 408-663-6117. NPS Amateur Radio Club, Code 62, Naval Postgraduate School, Monterey 93943	Feb 24	Dearborn, MI	Livonia ARC/ Neil Coffin WA8GWL 35681 Hess, Livonia, MI 48150

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: *Monitoring Times Convention Calendar*, P.O. Box 98, Brasstown NC 28902.

One night, while his partner sat parked in his patrol car writing reports, DeLeon used his scanner to check the cordless phone frequencies for drug activity. It was just a few minutes when just such a signal was discovered.

"It wasn't hard to figure out which home it was coming from as the subject said that he was going to go outside and see a friend off. Minutes later, he emerged from the house -- no more than 100 feet away from us -- still holding his cordless phone."

The officers continued to listen to the frequency when another call was intercepted between other subjects from the same home. This time they talked about delivering some marijuana. "After the conversation ended, the subject once again left his house and got into his car. He was carrying a pouch."

Since the officers were not sure that this was the subject on the cordless phone, they had to develop a reason to stop him. It wasn't long before the subject ran a stop sign.

"While being issued a citation, he was asked consent to search his car. He refused. A K-9 was brought to the scene to check for marijuana. (This kind of check can be done on any vehicle the has been stopped.) The K-9 gave a positive reaction which allowed a probable cause search. Sure enough, we found that same pouch that he carried from his house, filled with marijuana. The subject was arrested for felony possession with intent to sell."

"The story doesn't end here," cautions DeLeon. "When the State Attorney's office got the case they had to do some homework since they were not familiar with the use of cordless phones in this manner. But after a little book work, they gave it a clean bill of health. In the end, the subject was found guilty and fined heavily. Final score: cops 1, dirtbag 0."

"Interesting case," concludes DeLeon. "So if you're ever in Brevard County, Florida, and see a police car with a Grove Ant-4 on the roof, you'll know what's going on!"

George Hutsul of Thunder Bay, Ontario, writes to congratulate *Monitoring Times* saying that it is "the most enjoyable magazine I've read in a very long time. Keep up the great work," says George, who especially likes the Scanning Report, What's New, Letters (blush) and the frequency/program section.

"By the way," adds George, "Does anyone want to buy a Royal Canadian Air Force World War II radio? It's in good operating condition and covers from 75 to 550 kc and from 1.5 to 30 mc. It's a GR-17 RCA Victor. Any offers?"

If you're interested, write to George at Box 1022 Stn. F, P7C-4X8.

Thanks for your review of the Realistic PRO-2006 in the October, 1990 *Monitoring Times*, writes John E. Taylor of Langhorne, Pennsylvania. "I would never have considered seriously something marketed by Radio Shack without a favorable review and some objective information on performance," says John.

"This scanner has lot of nice bells 'n' whistles but I'm interested in hearing VHF/UHF transmissions. A fast scan rate isn't much good if it won't pull in intelligible signals!"

Aircraft are John's primary monitoring interests and he says that "I've been wanting a scanner for several years now. A PRO-2006 looks like what I want."

Good luck, John. Those things cover a lot of territory!

Disagreeing (in a way) is Harold M. Schneider of Bellevue, Washington. Harold felt "a ting of indigestion" when he had to "swallow" a recent article comparing the Radio Shack PRO-2006 with the AOR 2515.

"I have owned a '2005 for over a year now and just recently purchased the AOR-3000. The difference between these two radios is like comparing a VW beetle to a Ferrari! The AOR-3000 runs circles around the PRO-

2005," says Harold. "I just can't believe how the signals pour in! The AOR-3000 is vastly superior."

Finally, we close with a letter from Tom Haddon of Austin, Texas.

"As a reader of *Monitoring Times* and ten-year veteran of the defense industry, I feel compelled to correct a serious misunderstanding you are fostering to the shortwave listening/amateur community through your coverage of the over-the-horizon (OTH) radar developments.

"In the Communications column, you have stated that 'OTH Backscatter Radar can disrupt shortwave communications with a rat-a-tat sound often described as an audio woodpecker.' Although this statement is true by itself, the article implies that our own military radars are the source of the interference. This is just not true. All of this interference is coming from crudely designed and operated OTH radars of Soviet origin."

We're inclined to take Tom's word on it. Several years ago he worked on the initial design of the Navy's Relocatable Over-the-Horizon Radar.

We thank every *Monitoring Times* reader for taking the time to write, whether it be to correct or to confirm.

Please take a few more minutes to fill out and mail the annual *Monitoring Times* reader survey. It's your chance to tell us what you think. Believe me, no matter what the other magazines think about reader input, we really do listen to you!

We'd like to hear your comments, opinions, and experiences concerning the world of radio. Please understand that personal replies are not always possible.

Letters should be addressed to Letters to the Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902. Please include your name and address (may be withheld at your request).

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Closing Comments

A Matter of Conscience

Recently, while testing my new Scanner Beam, I was startled to hear what sounded like a casual room conversation on two federal high band frequencies. I swung the beam in the direction of the signal, listening as the voices grew stronger on my R7000.

An attorney for a major federal agency was conducting a conference call among the branch offices, detailing arbitration in a dispute with their union. Clearly heard were negotiative positions and proposals that management would offer, along with names of all the participants.

Considering my location on the western tip of North Carolina, it was probable that I was hearing this conversation 100 miles away in the Atlanta area. Listening in was legal according to both Section 605 of the 1934 Communications Act as well as the Electronic Communications Privacy Act of 1986. But what about the consequences?

If a bug had been planted in management's office it was a crime and I was obliged by law to report it. But if it is against the law to reveal the contents of a private radio transmission (Section 605), how could I report what I heard?

You are protected when you report any suspected crime to law enforcement. Since the FCC is the enforcement authority in communications matters, reporting to them any illegal use of the airwaves is appropriate. I called the engineer in charge of my FCC field office who referred the incident to their enforcement bureau.

But a closer search through my own database solved the mystery. The frequencies are assigned to the agency overheard, part of a regional network which had been activated for the teleconference.

No unlawful act had been committed here; the agency had compromised itself. While I was disappointed that I hadn't earned a world's record for DXing a bug, the incident did reveal the vulnerability of radio communications among uninformed users. Broadcasting one's private affairs over a 100 mile radius certainly improves chances of being overheard!

-- Bob Grove, WA4PYQ
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